This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

BOSTON MEDICAL
AUG 7 1962
LIBRARY

TRANSACTIONS

OF THE

INDIANA

State Medical Association

1905

FIFTY-SIXTH ANNUAL SESSION

HELD IN

WEST BADEN, INDIANA

Wednesday, Thursday and Friday, June 7, 8 and 9, 1905.

INDIANAPOLIS:
WM. B. BURFORD, PRINTER AND BINDER.
1905.

BOSTON MEDICAL
FEB 2 1906
LIBRARY.

CATALOGUED
FEB 2 1906
E. H. B.

BOSTON MEDICAL
FEB 2 1906
LIBRARY

OFFICERS AND COMMITTEES FOR 1904–1905.

GEO. T. McCOY, M. D., Columbus, President.
H. J. HALL, M. D., Franklin, 1st Vice-President.
C. T. HENDERSHOT, M. D., Cannelton, 2d Vice-President.
D. J. LORING, M. D., Valparaiso, 3d Vice-President.
F. C. HEATH, M. D., Indianapolis, Secretary.
A. E. BULSON, JR., M. D., Fort Wayne, Treasurer.

COMMITTEES.

ARRANGEMENTS.—E. D. Laughlin, Orleans; D. C. Peyton, Jeffersonville; Geo. D. Kahlo, Indianapolis; Geo. J. Cook, Indianapolis.

SCIENTIFIC WORK.—C. A. White, Danville; C. K. Bruner, Greenfield; F. C. Heath, Indianapolis.

PUBLIC POLICY AND LEGISLATION.—W. N. Wishard, Indianapolis; Edwin Walker, Evansville; Allen Pierson, Spencer; Harry Sharp, Jeffersonville; R. E. Holder, Columbus; M. A. Boor, Terre Haute; J. M. Wampler, Richmond; Chas. Trueblood, Anderson; A. A. Swope, Crawfordsville; E. C. Davidson, Lafayette; W. A. Fankboner, Marion; K. K. Wheelock, Fort Wayne; J. B. Berteling, South Bend; Geo. T. McCoy, Columbus; F. C. Heath, Indianapolis (ex-officio).

HYGIENE AND STATE MEDICINE.—J. N. Hurty, Indianapolis.

NECROLOGY.—G. W. H. Kemper, Muncie.

PATHOLOGY.—F. B. Wynn, Indianapolis; Wm. Chas. White, Indianapolis; R. H. Ritter, Indianapolis; J. B. Berteling, South Bend; F. M. Mueller, Lawrenceburg; C. S. Bond, Richmond; A. M. Hayden, Evansville; L. P. Drayer, Fort Wayne.

INEBRIETY.—M. F. Gerrish, Seymour; Geo. R. Green, Muncie; B. Elizabeth Malone, Indianapolis; Martha J. Smith, Indianapolis; J. M. Moulder, Kokomo; C. A. Daugherty, South Bend; H. J. Hall, Franklin.

TUBERCULOSIS.—Theo. Potter, Indianapolis; John F. Barnhill, Indianapolis; B. Van Sweringen, Fort Wayne; Chas. Trueblood, Anderson; J. H. Green, North Vernon; W. H. Gilbert, Evansville; Walker Schell, Terre Haute; L. L. Whitesides, Franklin.

EDITOR OF TRANSACTIONS.—A. W. Brayton, Indianapolis.

OFFICERS AND COMMITTEES FOR 1905-1906.

GEO. H. GRANT, M. D., Richmond, President.
D. W. STEVENSON, M. D., Richmond, 1st Vice-President.
H. C. SHARP, M. D., Jeffersonville, 2d Vice-President.
W. R. DAVIDSON, M. D., Evansville, 3d Vice President.
F. C. HEATH, M. D., Indianapolis, Secretary.
A. E. BULSON, JR., M. D., Fort Wayne, Treasurer.

COUNCILORS FOR 1905-1906.

1st District.—W. R. DAVIDSON, Evansville, for three years.
2d District.—GEO. KNAPP, Vincennes, for one year.
3d District.—HARRY SHARP, Jeffersonville, for two years.
4th District.—W. H. STEMM, North Vernon, for three years.
5th District.—M. A. BOOR, Terre Haute, for one year.
6th District.—D. W. STEVENSON, Richmond, for two years.
7th District.—W. N. WISHARD, Indianapolis, for three years.
8th District.—G. W. H. KEMPER, Muncie, for one year.
9th District.—P. J. BARCUS, Crawfordsville, for two years.
10th District.—E. G. BLINKS, Michigan City, for three years.
11th District.—ROBERT HESSLER, Logansport, for one year.
12th District.—A. E. BULSON, JR., Fort Wayne, for two years.
13th District.—C. A. DAUGHERTY, South Bend, for three years.

ARRANGEMENTS.—J. G. Nehrbas, Winona Lake; I. B. Webber and A. C. McDonald, Warsaw; Ch. R. Long, Pierceton; G. D. Kahlo, Indianapolis; B. Van Sweringen, Fort Wayne; C. A. Daugherty, South Bend.

SCIENTIFIC WORK.—T. C. Kennedy, Shelbyville; H. A. Cowing, Muncie; F. C. Heath, Indianapolis.

PUBLIC POLICY AND LEGISLATION.—J. F. Wampler, Richmond; H. C. Sharp, Jeffersonville; N. B. Aspinall, Plymouth; G. Reynard, Union City; President Grant and Secretary Heath.

NECROLOGY.—G. W. H. Kemper, Muncie.

EDITOR OF TRANSACTIONS.—A. W. Brayton, Indianapolis.

STATE MEDICINE.—J. N. Hurty, Indianapolis.

PATHOLOGY.—F. B. Wynn, W. C. White, R. H. Ritter, Indianapolis; L. P. Drayer, Fort Wayne; Walker Schell, Terre Haute.

INEBRIETY.—G. R. Green, Muncie; H. J. Hall, Franklin; L. D. Dillman, Connersville; M. F. Gerrish, Seymour; B. Eliz. Malone, Laporte.

TUBERCULOSIS.—Theo. Potter, Indianapolis; G. T. McCoy, Columbus; R. Hessler, Logansport; G. Knapp, Vincennes; G. W. McCaskey, Fort Wayne.

PREVENTION OF VENEREAL DISEASES.—W. N. Wishard, Indianapolis; C. E. Barnett, Fort Wayne; A. M. Hayden, Evansville; M. A. Boor, Terre Haute; B. Erdman, Indianapolis.

CONSIDERATION OF PUBLICATION QUESTION.—A. E Bulson, Fort Wayne; A. W. Brayton, S. E. Earp, G. J. Cook and S. P. Scherer, Indianapolis.

MEMBERS REGISTERED AT THE WEST BADEN MEETING.

This list of members present is copied from the registration book open to the members throughout the meeting. The list has been carefully prepared by the editor with the assistance of the Secretary. It is hoped that it is correct.

A. W. BRAYTON,
Editor Transactions.

W. J. Leach, New Albany.
W. J. Hurt, Waynetown.
Jos. A. Hallanan, Logansport.
Helene Knabe, Indianapolis.
G. O. Cosby, Elizabethtown.
H. W. Graves, Indianapolis.
J. L. Thompson, Indianapolis.
A. C. Kimberlin, Indianapolis.
W. W. Hoggatt, French Lick.
J. H. Oliver, Indianapolis.
L. C. Cline, Indianapolis.
C. D. Luckett, English.
J. D. McDowell, Vincennes.
R. W. Terhune, Whiteland.
Chas. Chittick, Frankfort.
C. C. Collins, Roachdale.
Edward D. Freeman, Osgood.
W. R. Hutcheson, Greencastle.
E. S. Perkins, Oolitic.
J. E. Bird, New Albany.
R. S. Rutherford, New Albany.
L. L. Williams, Brazil.
R. W. Cochran, Madison.
Charles S. Bond, Richmond.
Walter N. Sharp, Indianapolis.
F. E. Wiedemann, Terre Haute.
C. C. Morris, Rockville.
C. R. Ramsbrok, Huntingburg.
A. H. Faith, Washington.
L. C. Lukemeyer, Huntingburg.
G. B. Grim, Oaktown.
T. C. Kennedy, Shelbyville.
J. H. Walker, Henryville.
R. W. McCracken, Union Grove.
O. R. Sprigler, Terre Haute.
J. M. Wampler, Richmond.
H. C. Knapp, Haysville.
H. R. Allen, Indianapolis.
W. C. Cauble, Salem.
L. Park Drayer, Ft. Wayne.
Walter McFadden, Shelbyville.
Albert E. Sterne, Indianapolis.
S. L. Lingle, Paoli.
Riley Shrum, Bedford.
C. N. Stroube, New Maysville.
W. H. Thompson, Winamac.
E. H. Sturm, Jasper.
J. P. Salb, Jasper.
F. P. Hunt, Leipsic.
O. H. Stewart, Orleans.
C. M. Jackson, Springville.
C. T. Zaring, Greencastle.
D. May, Crothersville.
E. B. Evans, Greencastle.
J. Coble, Spencer.
H. A. Fox, Gosport.
Jno. D. McLeay, Indianapolis.
H. C. Robinson, Martinsville.
W. E. Nichols, Terre Haute.
E. M. Sweet, Martinsville.

J. R. Tourner, Bloomington.
C. F. Neu, Indianapolis.
G. O. Barnes, Seymour.
T. M. Staley, Bicknell.
O. F. Welch, Westport.
W. F. Sharrer, Delphi.
J. W. Anderson, Odon.
F. E. Moyer, Pennville.
Louks A. Bolling, Attica.
J. W. Bates, Broad Ripple.
Walker Schell, Terre Haute.
S. L. Strickler, Boggstown.
E. E. Mitchell, Avoca.
L. O. Carson, Traders Point.
J. Myers, Alton.
Allen Pierson, Spencer.
L. G. Bowers, Richmond.
I. M. Casebeer, Newport.
D. F. Randolph, Waldron.
C. H. Yenne, Washington.
John R. Pearson, Bedford.
J. F. Somes, Vincennes.
John H. Seniff, Crystal.
B. F. Chambers, Lyons.
T. A. Hays, Burns City.
E. E. Knox, Indianapolis.
J. DeMotte, Odon.
J. W. Strange, Loogootee.
W. H. Patton, Orleans.
E. B. McAllister, Terre Haute.
Laban Lindley, Paoli.
C. L. Boyd, Paoli.
J. M. Shields, Seymour.
F. B. Shields, Seymour.
E. E. Morgan, Ft. Wayne.
G. G. Brudi, New Haven.
W. Rice Holtzman, Stinesville.
J. P. Hetherington, Logansport.
John W. Moor, Albion.
Geo. Knapp, Vincennes.
Frank Blair, Princeton.
R. S. Anderson, Princeton.
Vincent Shepherd, Dupont.
I. N. Trent, Muncie.
Fred R. Charlton, Indianapolis.
Geo. H. Grant, Richmond.
H. A. Washburn, Freetown.
I. M. Sanders, Adams.
H. E. Yost, Vallonia.
M. G. Sturdenans, N. Philadelphia.
Wm. Charles White, Indianapolis.
E. A. Aikman, Clinton.
A. W. Miller, Holton.
H. C. Sharp, Jeffersonville.
Jno. L. Howard, West Baden.
S. R. Cunningham, Indianapolis.
Geo. D. Kahlo, Indianapolis.
Chas. C. McFarlin, Abydel.
Chas. Sudranski, Indianapolis.
L. L. Whitesides, Franklin.
J. P. Ward, Vevay.
J. N. Hurty, Indianapolis.
George J. Cook, Indianapolis.
Charles L. Wright, Huntington.
J. E. Hiatt, New Castle.
B. Van Sweringen, Ft. Wayne,
Jas. H. Ward, Indianapolis.
S. R. Peacock, Ladoga.
F. C. Heath, Indianapolis.
G. F. Holland, Bloomington.
Chas. E. Stone, Windham.
L. W. Brown, Seymour.
J. K. Ritter, Seymour.
A. T. Osterman, Seymour.
Fred R. Gobbel, English.
J. J. Johnson, Sulphur.
F. D. Norton, Columbus.
Jno. W. Hess, New Marion.
Wm. N. Wishard, Indianapolis.
F. M. Mueller, Lawrenceburg.
H. H. Sutton, Aurora.
J. R. Dillinger, French Lick.
M. Hassenmiller, West Baden.
T. C. Dollens, Trinity Springs.
John A. Gibbons, Mitchell.
W. W. Van Osdol, Mitchell.
W. C. Sherwood, Mitchell.
E. R. Luckett, Marengo.
T. C. Cochran, Sharpsville.
J. B. Duncan, Bedford.
A. J. McDonald, Bedford.
D. A. Holliday, Fairmount.
W. W. Tucker, Greencastle.
Chas. J. Cook, Indianapolis.

Geo. W. Finley, Brazil.
W. R. Davidson, Evansville.
J. Lewis Hicks, Arcadia.
Chas. W. McIntyre, New Albany.
John L. Morris, Columbus.
Geo. F. Beasley, Lafayette.
E. P. Easley, New Albany.
M. A. Austin, Anderson.
W. J. Sandy, Martinsville.
M. F. Johnston, Richmond.
J. E. King, Richmond.
J. F. Barnhill, Indianapolis.
Perry Woolery, Heltonville.
S. B. Elrod, Raglesville.
Geo. L. Kelper, Lafayette.
S. F. Teaford, Paoli.
A. J. Hermann, Logansport.
E. O. Harrold, Marion.
W. A. Fankboner, Marion.
Edwin Walker, Evansville.
James Wilson, Wabash.
O. K. McKittrick, Plainville.
M. O. DeVaney, Indianapolis.
B. H. Roark, Jamestown.
C. W. Campbell, Hammond.
W. T. S. Dodds, Indianapolis.
A. P. Fitch, Lebanon.
C. A. Daugherty, South Bend.
G. V. Woolen, Indianapolis.
D. W. Stevenson, Richmond.
T. C. Hood, Indianapolis.
Whitefield Bowers, Michigan City.
E. T. Sherwood, Linton.
W. H. Stemm, North Vernon.
S. C. Waters, Middletown.
Geo. W. Willeford, Washington.
J. R. Ball, Lebanon.
H. Herr, Washington.
G. D. Miller, Logansport.
D. Brooks Smoot, Washington.
O. B. Johnson, Lizton.
Geo. W. Combs, Indianapolis.
Miles F. Porter, Ft. Wayne.
E. D. Clark, Indianapolis.
John J. Kyle, Indianapolis.
D. L. Kahn, Indianapolis.
J. R. Eastman, Indianapolis.

J. G. Nehrbas, Winona Lake.
W. W. Sloan, French Lick.
J. R. Crowder, Sullivan.
C. F. Briggs, Sullivan.
Doris Meister, Elwood.
J. I. Maris, Paoli.
C. T. Hendershot, Cannelton.
C. E. Boyd, West Baden.
Theodore Potter, Indianapolis.
Frank B. Wynn, Indianapolis.
Chas. F. Pectol, Paragon.
M. S. McCormick, Eminence.
E. E. Kelso, Eminence.
R. O. McAlexander, Indianapolis.
O. G. Pfaff, Indianapolis.
G. Reynard, Union City.
A. W. Brayton, Indianapolis.
A. P. Buchman, Ft. Wayne.
J. T. McFarlin, Williams.
Albert E. Bulson, Jr., Ft. Wayne.
David C. Peyton, Jeffersonville.
David Ross, Indianapolis.
M. V. B. Newcomer, Tipton.
Jonas Stewart, Anderson.
J. McLean Moulder, Kokomo.
Chas. R. Sowder, Indianapolis.
A. W. Hayden, Evansville.
Geo. T. McCoy, Columbus.
Edgar Cox, Kokomo.
S. J. Young, Valparaiso.
Paul J. Barcus, Crawfordsville.
Charles F. Hope, Coatesville.
Louis W. Smith, Wabash.
A. J. Hostetler, Shipshewana.
B. F. Teters, Middlebury.
A. S. Jaeger, Indianapolis.
Robert Hessler, Logansport.
J. A. Little, Logansport.
C. F. Keegan, Chandler.
W. A. Hewins, Chandler.
Morris Drake, Shelbyville.
John W. Selman, Greenfield.
Frank W. Selman, Greenfield.
E. G. Blinks, Michigan City.
S. C. Dove, Westfield.
O. C. Neier, Indianapolis.
W. B. Fletcher, Indianapolis.

W. R. Cravens, Bloomfield.
U. B. Smith, Olio.
J. H. Calvert, Milton, Ky.
L. P. Luckett, Terre Haute.
Jas. F. Parks, Cumback.
John R. Andrews, Rivervale.
R. Belt, W. Terre Haute.
R. O. Miller, Terre Haute.
Z. H. Fodrea, Westfield.
J. C. Trueblood, Loogootee.
C. K. Bruner, Greenfield.
M. G. Moore, Vincennes.
Luella M. Schneck, Indianapolis.
Urbana Spink, Indianapolis.
A. B. Knapp, Washington.
C. H. Emery, Bedford.
H. C. Burcham, Albany.
Wm. M. Holten, New Harmony.
C. A. Caplinger, Wallace.
G. W. Proudley, Fair Oaks.
F. H. Austin, N. Madison.
J. W. McClure, Butlersville.
Geo. L. Ireland, Winslow.
Thos. B. Eastman, Indianapolis.
W. T. Lawson, Danville.
Frank Kennedy, Goodland.
H. O. Pantzer, Indianapolis.
J. F. Gillispie, Greencastle.
T. N. Braxton, Loogootee.
W. H. Bright, Martinsburg.
F. W. Kienzle, Greensfork.
J. E. Ferrell, Eden.
J. H. Ford, Indianapolis.
John F. Finley, Palmyra.
W. H. Link, Indianapolis.
Irvin Lindenberger, French Lick.
W. J. Young, French Lick.
C. P. Lænthart, Galena.
R. E. Baker, Orleans.
J. M. Jenkins, Cortland.
E. F. Page, Indianapolis.
H. A. Duemling, Ft. Wayne.
E. R. Sisson, Maxwell.
S. A. Whitsitt, Kent.
T. B. Noble, Indianapolis.
Emma J. Collop, Indianapolis.
F. L. Stallings, Caborns.
R. H. Gerard, Crawfordsville.

CONTENTS.

PAGE.

PRESIDENT'S ADDRESS; PROGRESSIVE MEDICINE—Pres. Geo. T. McCoy, Columbus. 9

SUNSHINE AND SHADOW IN MEDICAL ENDEAVOR—Jos. D. Bryant, New York City 24

THE PRÉVENTION OF POST OPERATIVE PARESIS AND ADHESIONS OF THE INTESTINES—L. P. Luckett, Terre Haute..... 44

MESENTERIC CYSTS—O. G. Pfaff, Indianapolis..... 55

INSTITUTIONAL PRACTICE—Harry Sharpe, Jeffersonville..... 67

SURGERY OF THE STOMACH—H. O. Pantzer, Indianapolis..... 75

THE ETIOLOGY AND PATHOLOGY OF RHEUMATISM—W. H. Patton, Orleans. 87

SCIATICA—John Little Morris, Columbus. 98

MEMBRANOUS CATARRH OF THE INTESTINES—Robt. Hessler, Logansport. 112

ELECTRICAL TREATMENT OF MALIGNANT GROWTHS—J. P. Hetherington, Logansport..... 134

THE ACCESSORY SINUSES OF THE SKULL, WITH A BRIEF REFERENCE TO DISEASES OF THE SAME—John Johnson Kyle, Indianapolis..... 142

FOOTWEAR AND ITS INFLUENCE ON FLAT-FOOT—E. D. Clark, Indianapolis. 153

ACUTE DIFFUSE SUPPURATIVE PERITONITIS—S. J. Young, Valparaiso. 176

MALIGNANT PERITONITIS—Etta Charles, Summitville..... 188

CANCER OF THE LARYNX, WITH REPORT OF CASES—L. F. Page, Indianapolis..... 201

GONORRHEA IN WOMEN—A. S. Jaeger, Indianapolis..... 214

THE EYESIGHT OF SCHOOL CHILDREN AND THEIR FUNCTIONAL REFLEXES DUE TO EYESTRAIN—Walter N. Sharpe, Indianapolis..... 227

HEADACHE AS A SYMPTOM—J. F. Hicks, Arcadia..... 239

THE ESSENTIALS OF TREATMENT OF ACUTE INFLAMMATION OF THE MIDDLE EAR—Albert E. Bulson, Jr., B. S., Ft. Wayne 250

FOOD ADULTERATION—R. U. Terhune, Whiteland. 264

THE CARE OF THE INSANE AT HOME—Jennie Jenkins, Assistant Physician at Eastern Indiana Hospital for Insane at Richmond..... 275

CHOLECYSTITIS—Chas. J. Cook, Indianapolis. 284

TREATMENT OF FRACTURES OF LOWER JAW—J. H. Oliver, Indianapolis. 299

PAGE.
THE TONSILS, OR A PLEA FOR TONSILLECTOMY—David W. Stevenson, Richmond 308
THE RATIONAL TREATMENT OF HERNIA—Jos. Rilus Eastman, Indianapolis. 317
FRACTURES OF THE PATELLA—J. H. Ford, Indianapolis..... 329
THE DIAGNOSIS OF GALLSTONE DISEASE—M. A. Austin, Anderson..... 348
GALL-BLADDER SURGERY—T. C. Kennedy, Shelbyville..... 361
LUMBAR EXPLORATORY PUNCTURE—J. A. McDonald, Assistant Physician, Central Hospital for Insane 372
CLINICAL STUDIES IN EUROPE—Edwin Walker, Evansville 383
THE DIAGNOSIS OF INTRACRANIAL COMPLICATIONS OF SUPPURATIVE EAR DISEASES—John F. Barnhill, Indianapolis..... 393
SYMPTOMS INDICATING IMMEDIATE OPERATIVE PROCEDURE IN BRAIN INJURIES—D. C. Peyton, Jeffersonville. 402
THE MINERAL WATERS OF ORANGE COUNTY—John L. Howard, West Baden. 413
THE ERYTHEMA GROUP OF SKIN DISEASES AND THEIR VISCERAL LESIONS—A. W. Brayton, Indianapolis..... 426
REPORT OF COMMITTEE ON NECROLOGY—G. W. H. Kemper, Muncie... 438
REPORT ON TUBERCULOSIS—Theodore Potter, Indianapolis..... 466
REPORT OF COMMITTEE ON STATE MEDICINE AND HYGIENE—J. N. Hurty, Indianapolis..... 469
REPORT ON PATHOLOGICAL EXHIBIT—F. B. Wynn, Indianapolis..... 474
REPORT OF THE PROCEEDINGS OF THE COUNCIL—A. E Bulson, Jr., Ft. Wayne. 475
REPORT OF THE HOUSE OF DELEGATES—F. C. Heath, Indianapolis.... 479
REPORT OF SECRETARY—F. C. Heath..... 481
REPORT OF TREASURER—A. E. Bulson..... 482
CONSTITUTION. 483
LIST OF PRESIDENTS AND VICE-PRESIDENTS..... 498
LIST OF MEMBERS BY COUNTIES 503
ALPHABETICAL LIST OF MEMBERS. 551

PROGRESSIVE MEDICINE.

BY PRESIDENT GEORGE T. M'COY, M. D., OF COLUMBUS, INDIANA.

Fellow Members of the Indiana State Medical Association, and Invited Guests:

We have assembled upon this occasion to celebrate the fifty-sixth anniversary of the organization of the Indiana State Medical Association, and by the courtesy of my distinguished fellows I have been honored with the presidency of this session. In accordance with time-honored precedent, one of the pleasant duties which falls to me is that of delivering the annual address.

To the older members of this association, those who have been active workers in it since the days of its birth, my words must be those of congratulation on its successful history; but to all of us belong anticipations for its future. Perhaps no greater contrast can be pictured than that offered by the retrospect and the outlook of the modern physician. This is an era of action, and the workers are sometimes apt to be so engrossed in their duties and speculations that they fail to give due credit to those who have gone before them, and who have hewn down the forests of darkness and doubt, leaving them the legacy of a vista of refined thought, and of physiological as well as pathological facts.

In the hurry and rush of the strenuous life, the struggle for fame and riches, we sometimes fail to appreciate how much we owe to the pioneers of the past, who accomplished far more than they realized, and builded better than they knew. But reverence for age is a fair test of the vigor of youth, and insolence or indifference toward the old and the past, whether in individuals or nations, is a sign of weakness rather than of strength.

In celebrating the fifty-sixth year of its existence this association stands tonight upon the record of its past. Its former presiding officers, from Dunlap to Stewart, have been men whose names

are inscribed on the tablet of affection, and its members need no apology for having their names inscribed on its rolls. Could the founders of this association have unveiled the future and looked forward to its growth in membership, usefulness and respectability, they would have been more than gratified. The benefits that have grown out of this organization, by uniting in one bond of fellowship more than two thousand physicians, all interested in its welfare and proud of its progress, can not be estimated. It should be a source of pride to each member of this association that the efforts of our predecessors have established a State organization upon so firm, so wise and so prosperous a foundation. In the early years of this society the best men in our profession were enrolled among its members, and so it is today—everywhere—the best men in the ranks belong to medical societies. Of the ninety-two counties in this State of Indiana eighty-nine have organized medical societies in affiliation with the State association. Moreover, the people of Indiana, as well as the physicians, owe a great debt to the State Medical Association. It has always been found on the side of right in its treatment of any of the great problems or questions affecting the welfare or advancement of the people.

Need I apologize, therefore, for the pleasure and gratification I feel in being called upon to preside over this learned and august body? It is the proudest moment of my life, and my greatest ambition is to retire from the presidency, leaving the society in as flourishing a condition as I found it.

Because of some fond memory we love to revisit places that we have seen many times, to read or re-read a beautiful poem because it expresses a tender sentiment in language, which appeals to our hearts and experiences, to hear again familiar melodies, bearing the same old sweet refrain, or to be carried for the time being beyond our narrow monotonous lives by the harmonies of some of the great symphonies or oratories of the old masters. Because of this universal sentiment we enjoy hearing the story of the progress of medical thought from the mysticism and superstitions of former times down to the present, the so-called scientific age of medicine.

I might, accordingly, interest you or even entertain you with a

review of the achievements of the Indiana State Medical Association from the date of its organization, from June 6, 1849, down to the present time. But this has been so thoroughly done by my more competent predecessors, more especially by the venerable W. H. Wishard, of Indianapolis, in his presidential address, that I desist from any such attempt, and I refer you to the yearly "Transactions," the archives of our association, in which you will find treasured up much of the best thought of the medical profession of Indiana.

Before commencing the preparation of his address, or even selecting a subject, I decided to look over the addresses of former incumbents, so that I might present something new, but so well have my fifty-five predecessors covered the ground that the field is well-nigh exhausted. Indeed, the more I studied the matter the more I became convinced that presidential addresses for occasions of this kind would better be dispensed with—especially on the fifty-sixth anniversary. For it is more than ordinarily difficult to select a subject not already worn threadbare, or cultivate a field, the soil of which has not previously been exhausted, in search of some subject of sufficient importance to interest a learned body such as I am now addressing.

Realizing the fact that I have no special knowledge of any medical or surgical subject, as the occupation of a general practitioner, whose duties are continuous and necessarily routine, is not conducive to original research, and, knowing all too well my limited capabilities, I almost despair of being able to hold your attention, even for a short time, to a discussion of any subject or topic which I may bring before you. But as our by-laws require the president to deliver an annual address, it may reasonably be inferred that it is compulsory for the members of the association to listen—as best they can. The subject that I have chosen for this evening, "Progressive Medicine," has done duty before, yet I hope it may not appear to any of my audience as a worn-out theme.

A thorough review of medical progress for the year 1904 would occupy entirely too much of your time. Therefore I will attempt only a casual glance at some of the more important points. The

essential progress in medicine during the last year was in the line of perfecting that dating from the years just preceding. Recent progress in physics, chemistry and microscopy has given to the medical profession a wealth of knowledge which it does not yet know fully how to utilize. In fact it is a question whether under certain circumstances we have not a little too much knowledge. What we want is to know how to make our knowledge more effective. The getting of knowledge and the getting of wisdom are totally different, for never was a truer word said than that by Tennyson, "Knowledge comes but wisdom lingers."

INTERNAL MEDICINE AND THERAPEUTICS.

The tendency toward the development of more exact methods in clinical diagnosis marks the chief progress in internal medicine. Efforts at simplification as well as exactness will do much to place these methods in the hands of physicians who most require them and can employ them without too great expenditure of time. During the past year the study of the subject of blood pressure has been given a new impetus and a practical value which it has not had heretofore. For the necessity of a correct knowledge of the tension of the blood vessels in disease has long been recognized; this is especially true, as pointed out by Dr. Hare, in the treatment of pneumonia. Increase and decrease in arterial tension may be recognized by the practical touch without the aid of mechanical device, but small differences can not be detected in this manner. The sphygmomanometer has been modified and improved until now it can be employed with little loss of time, and, if it should fully meet the expectations of the clinician, it will be a valuable addition to the armamentarium of every physician. The introduction of Riva-Rocci's instrument has done much toward rendering the determination of blood pressure a practical procedure. But "taking the pulse" by the old method of palpation will not, and should not, be abandoned.

Cancer of the stomach and ulcer of the stomach have both received a great amount of attention during the past year. Though the year has brought forth no marked advancement in the methods

of diagnosis of cancer or ulcer of the stomach, the recent developments in the surgery of the stomach by such surgeons as Mayo, Moynihan, Mikulicz, Ochsner and others have brought out the great importance of an early diagnosis. In ulcer of the stomach gastroenterostomy has given such excellent results that it seems to be the rational treatment. In a paper read before the Ohio Valley Medical Association Dr. C. A. L. Reed, who is happily with us this evening, discusses the propriety of removing ulcer of the stomach out of the domain of internal medicine and classing it as a strictly surgical disease. We are compelled at least to concede that the medical treatment of chronic ulcer has not been altogether satisfactory, and, therefore, where we fail we should not hesitate to call upon the surgeon. Yet in no case should an operation be advised until the case has been carefully observed in a systematic way, neither should we cease our efforts to discover the pathological condition preceding the formation of ulcer in the stomach.

The past year, however, has brought us no nearer the solution of the early diagnosis of carcinoma of the stomach than we have been heretofore, though the work done in this direction by the skilled surgeon has given a new impetus to this subject. If satisfactory results are to come from surgery of the stomach, then no means should be spared to make as complete and early a diagnosis as possible. To quote from the paper of Dr. G. W. McCaskey, of Fort Wayne, in the Journal of the National Association: "We are admittedly unable to place our fingers on a single symptom of analytical finding, the presence of which can be relied on to establish the diagnosis of early gastric cancer, and the absence of which can exclude it. * * * It is probably true, in a vast majority of cases, that when the growth has reached the stage when it can be palpated through the abdominal walls, sufficient metastases have occurred to make a complete removal impossible." A conservative attitude for us to take, and one that would probably be justified by the results, would be: When in doubt make an exploratory incision; it is better to explore in vain than to defer too long.

A positive method of diagnosis in typhoid fever, one that is simple and practical and can be used by the general practitioner

not provided with a well-equipped laboratory, has long been looked for. In an effort to simplify the Gruber-Widal reaction as a diagnostic measure in typhoid fever, Ficker has produced a modification of this method which promises to provide for this need. A description of the method would be out of place here, but the fact deserves mention, for we welcome any addition to our stock of knowledge in the proper study of typhoid fever—a preventable disease that is annually costing the State of Indiana millions of dollars and many, many valuable lives.

The failure of all attempts to produce an antitoxin for tuberculosis has stimulated work along other lines, and may be the first step leading to more positive knowledge in the production of immunity from that dread disease. Behring has failed to demonstrate the identity of the bacilli of bovine and human tuberculosis, but by means of his experiments has been able to show that cattle that had been injected once or twice intravenously with moderate quantities of human tubercle bacilli not only did not become tuberculous, but acquired a very high degree of immunity against bovine tuberculosis, so that subsequent inoculation with several times the usually fatal dose of bovine tubercle bacilli failed to produce an infection. It seems possible that the reverse may also be true—that the inoculation of human beings with bovine tubercle bacilli will produce a certain degree of immunity against human tuberculosis. The next few years will doubtless produce much valuable work along these lines, though during the past year nothing of positive value in the treatment of tuberculosis has been added to our knowledge.

The recent investigations of the functional activity of the kidneys add to our knowledge of the nature and treatment of renal disease. Where the kidneys fail to eliminate properly there is a retention of solids in the blood, and it is this that threatens uremia. Dropsy, therefore, may be considered a conservative process on the part of the body to prevent, by means of the retention of the water, the increasing concentration of the blood. Widal's theory seems to possess a very firm foundation. At a recent meeting he again called attention to this subject, and stated that the patient suffering from

nephritis could be permitted to partake of any food just so long as the amount of sodium chloride contained in the food did not equal the amount eliminated. This salt restriction is absolutely harmless, and the patient suffering from Bright's disease will readily appreciate the improvement. The sodium chloride retained in the tissues attracts water by physical affinity. Reduce the intake and the edema disappears. The efficacy of the milk diet for nephritis is not so much in the avoidance of irritating substances as in the fact that milk is so poor in salt. A diet containing less salt than is contained in milk would be still more valuable.

The prophylactic use of tetanus antitoxin during the year 1904 was much oftener resorted to than in any of the preceding years and apparently with greater success. The number of Fourth of July accidents followed by tetanus was very large. It is barely possible that the favorable results were not entirely due to the earlier administration of the tetanus antitoxin, but to the better care of the wound at the time of the accident.

In diphtheria, the announcements made by Cruveilhier and Wasserman are both valuable. According to the former, antitoxin injected into a vein acts far more rapidly and vigorously than when given hypodermically. His results indicate that in desperate cases, where the treatment has been delayed, the intravenous administration of antitoxin promises far more than the hypodermic. Wasserman's serum is to prevent contagion. Children who have recovered from diphtheria frequently carry in their throats virulent diphtheria bacilli for several weeks and are a constant menace to all those with whom they come in contact. Wasserman's serum, it is claimed, is bactericidal, and will destroy these bacilli when applied to the mucous membrane of the throat. If this is true its value is great.

PATHOLOGY AND BACTERIOLOGY.

It would be a great task to review the progress of pathology and bacteriology during the last year, and, besides, such a review would not be profitable at this time. I will, therefore, notice only some of the work done in tuberculosis, and some which bears upon the extermination of some of the infectious diseases.

The discussion and investigation of tuberculosis questions have been as active as in previous years. The pathogenesis and specific etiology of the infection appear to be settled. The old teaching of the inhalation of tuberculosis seems to have gained the victory over the teaching of infantile infection. The work done in 1904 has brought forth results that do away with much of the horror of bovine tubercnlosis. The extensive experiments made in Berlin are so plain and uniform that they exclude any doubt.

The publication by Japanese authors of the tuberculosis condition in Japan before and after the contact with Western civilization is most convincing. Kitasato, in American Medicine, has joined the ranks of Koch, and calls attention to the fact that previous to the importation of cattle into Japan the cattle of Japan were free from tuberculosis, and yet, even though the Japanese children drank very little milk, they frequently suffered from tuberculosis. Moreover, the mortality rate from tuberculosis is terrific in Greenland, where no cattle exist.

It would be extremely gratifying to know that so far as infection by bovine tuberculosis is concerned, milk that is otherwise pure might be taken with comparative safety, and the investigations carried on during the last year seem to warrant this statement.

Since writing the above I had the pleasure of attending one of the grandest and noblest assemblages of physicians, sanitarians and philanthropists that has ever been brought together on this continent, The National Association for the Study and Prevention of Tuberculosis. Through the courtesy of Professor Ravenal I had the opportunity to examine a number of specimens showing the results of subcutaneous inoculation of animals with human tuberculosis. The number of failures I do not know, but the following are some of the results: Specimen No. 1, mediastinal gland of a cow; No. 2, liver of a cow; No. 3, lung of a cow, all showing marked tubercular lesions, resulting from subcutaneous inoculation of human tubercle bacilli from cultures obtained from children. No. 4, prescapular gland of a calf; No. 6, lung of a sheep, from cultures obtained from a child. No. 5, lung of a cow; No. 7, lung of a sheep, from cultures obtained from an adult. All showed marked tubercular lesions.

Professor Welch of Johns Hopkins University, in his address before the association, stated that in ten cases of tuberculosis, in which infection probably entered through the digestive tract, and was manifested in the lymphatic glands, in three the infection was of bovine origin. These experiments indicate that Koch was possibly in error when he made the statement that "bovine tuberculosis, either pulmonary or general, could not be produced by subcutaneous inoculation of human tubercle bacilli." While the reverse has not been proven, as no reliable experiments have been made, we should be cautious in our statements in regard to the harmlessness of bovine tuberculosis, or the improbability of its transmission to the human family.

The recognition of the specific cause of many infectious diseases, the knowledge of the life history of the pathogenic micro-organism, the discovery of the portals through which they gain entrance to the animal economy, and the conditions under which infection occurs have brought to us material powers to prevent and protect. It is this knowledge that has led to the development of a scientifically evolved phrophylaxis against tuberculosis and typhoid fever, of cholera and plague, to the abolishment of malaria and the dreaded yellow fever. We have only to look upon the beneficent and far-reaching influence of the recent work of Agramonte, Lazear, Carroll and Reed with regard to yellow fever, to realize what bacteriological studies are doing for preventive medicine.

Within the last year new ideas on the complete extermination of infectious diseases have come to the front. Koch's conception that "only the infected individual can cause infection" is rapidly gaining ground. According to the way in which the infectious agent is liberated from the system, the method to protect others must vary; but there is only one leading principle in all of them—"its destruction as soon as it leaves the patient or while it is still in his body."

"Accurate knowledge of the ways in which the causative agents of infectious diseases are discharged from the infected body is of great practical value. The same means that carry pathogenic microbes into the outside world are also the most important means

of spreading infection. Hence, the physician must know the modes of elimination in order to apply such measures as most quickly and certainly help to render patients with communicable diseases or their agents harmless to others."

While it will be impossible to do away with infectious diseases by general sanitary measures, it becomes easily possible to keep them under control when the single patient is so cared for during the time he is a carrier of the infectious agent that he can not transfer the infection to his surroundings. Pathology is being studied more thoroughly and carefully each year by the general practitioner, because of its important bearing on the subject of

PREVENTIVE MEDICINE.

"The intelligent and up-to-date observer of things medical can hardly have failed to notice the very remarkable discrepancy between the progress made in therapeutics during the past twenty-five years, and that achieved in some other branches of medical science. It is true that many and important additions have been made to the materia medica, and even more important advances in the rational treatment of disease. But in the realm of therapeutics proper—the specific medication and cure of disease—one is forced to confess that very little real fundamental progress has been made.

"We can not help being struck with the paucity of results in therapeutic research as compared with the profound and far-reaching fruits of an equal amount of time and labor expended in the field of pathology. And our surprise is still greater when we contrast the slow, halting advance in the cure of disease with the rapid and telling strides which have been made in its prevention."

Our acquaintance with the character and movements of the enemy is far in advance of our weapons with which to attack. The increased immunity which civilized peoples now enjoy from diseases which formerly scourged their ranks, and the comparatively light type which many of these diseases assume, are due not to our increased facilities for curing them, but to our increased knowledge of their nature and cause and to our consequent ability to head them off. All this has but one significance. It means that thera-

peutics is not the avenue along which medical science must look for real and permanent progress. While from a practical point of view the relief and cure of disease is a most vital and important part of medical science, yet from an ideal standpoint, it is only a temporary expedient, just as war is a necessary but subordinate accompaniment of the vastly greater political policy of a civilized government. The great central orbit of medical science around which all lesser movements revolve, makes for the abolishment of disease, and in the nature of things there can be no real advance except toward this goal. That preventive medicine has a most brilliant future there can be no doubt.

In this summary of the more important findings recorded in current medical literature, to which I have access, I have attempted to point out the lines of thought that have received the greatest amount of attention by our foremost observers and investigators. I have necessarily omitted many things of equal importance. The great progress made in surgery, gynecology, neurology, ophthalmology and other special lines of practice I have omitted altogether. To those who desire a more complete review of the progress of medicine during the year just past I may recommend the January, 1905, number of the Interstate Medical Journal, from which I have made liberal extracts.

Since the last meeting of this association one of the most remarkable gatherings of learned men ever held was assembled in the city of St. Louis. Every institution of standing in the United States and every department of human knowledge was represented by men supposed to know most about it. It is pleasant to note the importance that was given to medicine in this assembly. Papers were read and discussed by medical men from all parts of the world, and some of these papers were of peculiar and permanent interest. Our own Drs. Hessler and Hurty took a prominent part in the discussions pertaining to preventive medicine. Such meetings as this accentuate the democracy of science. Learned men meet on a common ground, and are too busy fighting the battles of truth to bicker over petty differences.

In a paper read at this congress and published in American

Medicine, page 915, Dr. William S. Thayer of Johns Hopkins University called attention to the wonderful progress made by medicine during the last century. First came vaccination; then anatomy and physiology were placed upon a scientific basis; exact methods of diagnosis followed; the theory of cellular pathology came into existence; bacteriology came and made surgery safe and placed prophylaxis on a sound foundation; and today the problem of immunity is uppermost and is a natural consequence of the scientific thought going before. All this goes to prove that medicine is fast leaving the empirical and becoming truly scientific. This necessitates the placing of the profession upon higher educational ground. It can not continue to be scientific unless our ranks are filled with men well grounded in the fundamentals of pure science. The unfit should be weeded out before they become a part of us. It should be made easy for men of brains and ability to enter our profession, and difficult for all others. Progressive medicine largely depends upon the progressive doctor, and the keynote to progress is preparation.

Our ranks, therefore, should be filled with men thoroughly trained, brave, ambitious, intense, loyal, and, in addition to this, possessing those rare qualities of head and heart that are found in the makeup of perfect manhood. For character has a deeper foundation than that of mere training and association. It comes somewhere out of the dim and unknown past. The man who stands head and shoulders above his fellow men is bigger because he was born bigger. No man has ever won great things unless created great in the fineness of his brain, the intensity of his nature, the clearness of his perception, and the force of his application. And so it is men of character as well as of training that we want to fill the ranks of progressive medicine.

Progress in medicine has always depended upon hard work and intense application; it will continue to be so in the future. The element of chance or luck has no place in progressive medicine. The so-called accidental discoveries in medicine are always made by those engaged in laborious study and investigation. A successful career is a constant stimulation to beginners, and in the profession

of medicine there are guiding lights of genius to keep one off the rocks of failure; but the study of any successful life accentuates the truism that genius is nine-tenths hard work. Inspiration waits upon application, and, like a fairy godmother, illumination dances before the plodding way of the hard worker. Progressive medicine never hurries, never lags, never rests, because there is no rest in science. "Science always progresses. Like the stars we must go on, unhasting, unresting, always at work."

There is one word that is directly responsible for all the advances in medicine during the past centuries. It has been called by Professor Osler the "master word." Through a little one, the master word becomes large in meaning. The stupid man it will make bright, the bright man brilliant, and the brilliant man steady. To the youth it brings hope, to the middle-aged confidence, to the aged repose. With it Virchow smote the rock, and the waters of progress gushed out; while in the hands of Pasteur it proved a very talisman to open to us a new heaven in medicine and a new earth in surgery. Not only has it been the touchstone of progress, but it is the measure of success in everyday life. And the master word is "work."

The necessity of preparation is emphasized in every department of life—and nowhere more than in the medical profession—because to every individual there comes at some time the unexpected and full testing of his powers, and if he is found wanting he falls deservedly into the rear of the column in disgrace, and is rarely heard from again. When some great event crowns the life of an individual it is often remarked that but for this he would have remained unknown and that it was a lucky accident that made him famous. If this "accident" ever happens it comes as an exception to the rule that behind the opportunity lay the lifelong preparation which fitted for the seizure of the supreme moment.

Do you wish to play an important part in the future of progressive medicine? You must begin and complete your preparation while you still have youth and its attendant vigor and capacity for work—before you have passed the meridian of life and begin the descent—while the sun is still shining on your back. Old me-

chanics often become indispensable to their employers, it is true, on account of their general knowledge of the business in which they are engaged and because they can always do good work with the tools they learned to use in their younger days. And, as a matter of fact, old men have made many great discoveries, but it is mainly to young men that the world owes those steps across the boundary of the unknown, which constitute landmarks in the development of knowledge.

A word, therefore, to the younger practitioners of this association, whose activities will wax, not wane, with the growing years of the century which has opened so auspiciously for the progress of medical science. You have entered upon a noble heritage, made by no efforts of your own, but by the generations of men who have unselfishly sought to do their best for suffering mankind. On your shoulders their mantle has fallen. Much has been done; much remains to do.

A way has been opened, and to the possibilities in the scientific development of medicine there seems to be no end. Act well your part, and thus the nearer approach the great ideal so beautifully expressed by Robert Louis Stevenson:

"There are men and classes of men that stand above the common herd; the soldier, the sailor and the shepherd not unfrequently; the artist rarely; still more rarely the clergyman; the physician almost as a rule. He is the flower of our civilization, and when that stage of men is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried by a thousand embarrassments, and, what are more important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sick-room and often enough, though not as often as he wishes, brings healing."

But it does not follow that your attainment of this high ideal will receive public recognition. You can not all work in the blaze of the noonday sun, or even in the glare of the electric light. Like

the ideal wife of whom Plutarch speaks, the best doctor is often the one of whom the public hears least. To you, the silent workers in the ranks, in villages and country districts, in the slums of our cities, in the mining camp and factory towns, in the homes of the rich and in the hovels of the poor—to you is given the harder task of illustrating in your lives the old Hippocratic standards of learning, of sagacity, of humanity and probity—of learning, that you may apply in your practice the best that is known in our art, so that to all everywhere skilled succor may come in the hour of urgent need; of a humanity that will show in your daily life tenderness and consideration to the weak, infinite pity to the suffering and a broad charity to all; of a probity that will make you under all circumstances true to yourselves, true to your high calling and true to your fellow men.

And, indeed, these words are applicable to us all, for this association has very few old men. True, some of its members were born sixty, seventy, eighty and even ninety years ago, yet by constantly keeping the company of young men, mingling with them in their studies and rejoicing with them in their success, their noble minds stand out of reach of the body's decay. How old is a man? The weight of years may bow his back and the touch of time may tinge his hair with white, and yet he need not age in spirit. The man or woman who cherishes the ideals of youth, who nurtures these ideals through the years, their hopes, their dreams, their loves, may hold on to youth even until the sun dips down into the silent waters.

The springtime of life is the age of hope and aspiration. The youth speculates in futures and his dreams lead him whither ambition points the way. His eye is set upon the day-star of his dreams. He passes on to the stage of action and achievement, and then to the age of reminiscence, when the thoughts turn backward to the years of accomplishment.

The sunset of life is the richest period of human existence; the period when our memories recall the panorama of years, with all its varied incidents, all its sunlight and its shadows. Happy indeed is he who feels at such a time the peace and satisfaction which come as the fruitage of years well spent.

THE SUNSHINE AND SHADOW IN MEDICAL ENDEAVOR.

JOSEPH D. BRYANT, M. D., NEW YORK CITY.

Justice to myself, and a proper consideration for those whose faith or curiosity has prompted them to be present on this occasion, impels me to say at the outset, that I have been not a little troubled to select a topic that might suitably meet expectations and at the same time afford an excuse for my presence. I might, perhaps, with a faint trace of propriety, lighten each of these contingencies with the guileless claim that neither you nor I can be regarded entirely responsible for a crisis which has been fostered for a considerable time, and is now launched by those who are charged with the success of the occasion. However this may be, a reasonable fidelity to those who have so implicitly trusted us, should beget praiseworthy patience in you, and a degree of commendable brevity in me that benefits your present comfort and the character of the topic under consideration.

The theme of the evening as already announced is somewhat euphonious, but quite suited, as it seemed to me, for an occasion of this kind; one healthful in all respects, dignified by character and learning, and adorned by beauty and grace.

In order that there may be no suspicion in the minds of any, that the topic of our choice is intentionally clothed in a garb of mysticism, I hasten at once to say that the expression, "The Sunshine and Shadow" has no hidden meaning, but is chiefly employed on this occasion to express in a metaphoric and more agreeable, but in no less emphatic way, the well recognized results of our profession, in the long struggle for the relief of human affliction. The glorious sunshine of medical achievements is reflected in the happy faces and glad manners of the patients and their friends, also in the gratified expression of the otherwise imperturbable demeanor of the experienced medical attendants.

Bereft, indeed, of healthy human sentiment are those whose hearts are not gladdened by the melodious expression, "the patient is better," "is out of danger," "is well again," thus indicating to all concerned that Nature's forces, aided by those of genuine medical endeavor, have rescued yet another sufferer, thereby restoring happiness and help to loved and needy ones.

To those who think of others than their friends, and sympathize with them in their distress and forebodings, those who have in their bosoms thoughts of the welfare of mankind, the sunshine in medical endeavor is seen in the results of the efforts of rescue of all men, of all climes, from physical distress, thus adding correspondingly to the comfort and prosperity of the whole people. No financier notes with greater care the fluctuations in monetary affairs, nor accounts for the variations more astutely, nor appreciates more keenly the import of the changes, than does the true physician note and estimate the varying results of genuine medical endeavor, in the different medical centers, and in the medical clearing houses of the civilized world. The features of the former brighten with the gratifying sensation of the knowledge that he is the possessor of greater wealth, and let us hope of greater determination to aid the unfortunate and to add to the world's enhancement. The features of the latter are brightened by the sunshine of the facts, that the beneficent endeavors of his profession have robbed pain of its terrors by means of the strengthening slumber of anesthesia; have stripped infection of its dread by the power of sanitation and asepsis, and have disarmed fatal contagion and distressing disfigurement by means of simple vaccination.

These achievements alone have added more lives and treasure and comfort to the world than all its conquests have destroyed since their time; they have added more to a nation's financial and human assets, than have all of its victories. The bounteous achievements of the physician are attained in comparative silence, and with unobtrusive effort as becomes his calling, and are therefore much less manifest and understood by the people than are the achievements of statesmen and warriors, whose general aims and activities are only rarely out of sight and hearing, and whose final

rewards emphasize in no uncertain manner the confidence and appreciation of the people. The sunshine of successful effort and of appreciative response gladdens the heart of the true physician no less than it does the heart of one who achieves beneficent triumphs in other fields of action.

Those who guard the security of individual existence in the cool moments of every day life exhibit quite as great and often greater steadfast bravery than do those whose fortitude is strengthened and whose efforts are stimulated by the fascinating din and intoxicating allurements of battle. But enough of this feature of the matter has been said, for were I to continue longer in this manner of expression you might be led to believe that I am partial in my views and utterances regarding the achievements and the burdens of those of my own profession.

As you will no doubt recall, my theme provides for shadows as well as sunshine in medical endeavor. The shadows in medical endeavor, like other shadows, bespeak the absence of enlivening sunshine, and suggest the want of the good cheer that accompanies the need of its presence, more especially in the counterfeit form of endeavor. Sunshine and shadow have antithetic attributes and attend on each other with a degree of fidelity that puts to shame the fealty of human co-operative action in tangible matters. Sentimental writers have noted this fact and utilized it in a delicious manner, as did Bovee when he sang, "False friends are like shadows, keeping close to us while we walk in the sunshine, but leaving us the instant we cross into the shade." Physicians have ample chance to mark the change from sunshine to shadow as modified by the acts and sayings of those dwarfed by the characteristics of complacency or envy. The gratifying sunshine of a conscientious physician's success is too often darkened by the distressing shadow of envy of those who find it easier to gaze into the large than into the small end of the glasses, and quite as natural, and then contend that small things and those beyond their conception or reach are too unimportant for serious thought, instead of keeping step with the comprehensive endeavor that lead the way in meritorious advance. Such persons as these clog the channels of success and are as brigands in the paths of enlightenment.

The sunshine and shadow in medical endeavor! Again the topic is repeated, so that we may better emphasize the fact that the endeavor which we are considering is no less surgical than medical. Medical endeavor includes that of surgical, since the resources of the latter are as much remedial measures of cure as are other means of relief. The proper practice of surgery is based on experience and knowledge and on hard knocks, no less than is the practice of medicine.

I wish, with the requisite degree of emphasis for the purpose, to register my unqualified objections and strenuous opposition to the idea, wherever it may be entertained, that the surgeon is the executive agent of the physician unless, unworthily, he himself so chooses to be. That the judgment and services of the surgeon are not necessary until the physician in charge suggests that they be secured, and perhaps because of a threatening complication that requires for its interpretation and remedy surgical experience and surgical therapy, is a folly that is, I am happy to say, rapidly disappearing, not only because of the recognized fatality that too often follows late consultations, but because of the mutual appreciation of the greater services to the patient and to the profession of prompt and early co-operative thought and action. It would be strange, indeed, at this particular time, and would be reasonably dependent on heedless thought or unpardonable vanity on my part, were I not to insist with equal emphasis on the need of co-operative action in surgical instances as well as in medical.

The shadows of popular distrust and disapproval, and those of professional displeasure and censure, sometimes appear so suddenly and become of such magnitude as to smother by their unforgiving and spiteful character all efforts of explanation in instances of fancied or real oversight, referable especially to the treatment of distinguished public personages. So frequent and inconsiderate are those manifestations in such instances that "the head that wears a crown" can not lie more uneasily than that of one of our profession who is charged with the physical welfare of a person of markedly distinguished rank. Especially is this true when, in moments of misguided confidence or of mistaken policy, matters

whose importance can only be properly estimated by the family of the patient or by the medical attendants, are given public notice. Aspiring and proud souls whose ambition prompt them to place their names highest on the rugged face of an unconquered precipice are not more foolhardy in many instances than are those of our profession who affix their names to a public bulletin bearing details that offer the opportunity for invidious chatter of envious and self-constituted critics. The soothsayer who bade Cæsar "Beware the ides of March," were he living today, might with equal pretension bid us beware the "ides" and ends of medical bulletins of prolific recital.

Fearing that you may suspect that I, for some reason, yet feel the smart of the public lash, I beg to inform you that I am not "a bruised reed" that has been broken, nor have I been subjected at all to the Shakespearan form of chastisement as verbally dispensed by Cleopatra; therefore no one has said, like her, "Thou shalt be whipped with wire, stew'd in brine, smarting in lingering pickle," but medical friends of mine and of yours have been thus figuratively whipped by the mischievous and overwise utterances of those to whom have been graciously given or wisely denied, facts that can be properly construed by only those at the bedside of the patient.

In a lesser degree than in the preceding examples many of us occasionally receive more than we deserve, because of expressions that thoughtlessly escape us entering at once the public ear, or entering a private ear with public predilections. Let us then cultivate the sunshine of endeavor in these respects with a due consideration for the shadows begotten in our paths by the unwise or thoughtless indulgence of others in matters beyond their willing understanding.

It is the medical endeavor of modern age that has just engrossed our attention, the sunshine and shadow of which in all of their characteristics have been the natural product of the spirit of the times, as, in essential respects, no doubt, have been the sunshine and shadow in the medical endeavor of the early history of the healing art.

The knowledge and ability of healing the afflicted is developed in accordance with the opportunity and desire to cultivate the calling; the opportunity and the desire result from the willingness to seek relief and the degree of the devotion exercised by those who aim to provide it; the willingness to seek relief is prompted by the confidence reposed by the afflicted in those whose capacity for good is measured by the honest outcome of intelligent assiduity, exercised in a proper and adequate field for the purpose.

The laity too frequently clothe those of our calling, more especially the surgeons, with romantic attire, and often seem more impressed with the agents of our craft and by our utterances than by our material presence. They watch for something startling and even measure our importance by the magnitude of the exhibit; and not all of us, I am disposed to remark, make perilous efforts to dispel the illusion. I now recall a physician whose appearance and manner were, to my then youthful and unsophisticated mind, the personification of Ajax defying the lightning. One day in the presence of many bystanders, this physician was asked by a patient: "How much shall I pay you for your advice, doctor?" The pseudo-Ajax, rising to the occasion and to his full height at the same time, in a loud, convincing tone replied: "An ordinary doctor would charge you two dollars. I am an extraordinary doctor and I won't charge you but two." The interest of the onlookers seemed to me to increase a hundred fold at once, and so far as I am concerned, I am not quite willing to deny that a microbe of some form of ambition did not infect me at that time. Certainly everyone present on that occasion seemed to be delighted to have been a factor in so startling an announcement, and the poor patient himself parted with his hard earned money, emitting a radiant expression of wonder and satisfaction that seemed to say, "By Jupiter, an angel, or if not, an earthly paragon," and at the same time unconsciously illustrating by his appearance the sentiment of Emerson, uttered perhaps twenty-five years before: "There is a remedy for every wrong and a satisfaction for every soul!" In this instance, however, the charge made was twice the sum usually asked at that time and place for the services rendered,

and which on this occasion were for the relief of an illusionary complaint. It has been many years since this incident happened but not so many since similar ones have occurred. The circumstance then illustrated and still illustrates the subtle and controlling influence exercised on the minds of those with imaginative ills, annoying to themselves and friends and perplexing to the medical attendant, of the assertive declarations made by noisy and irresponsible persons.

Patients in despair because of these afflictions, encouraged by their friends and sometimes offended by the apathy or well meant sarcasm of the medical attendant, often reluctantly seek the relief offered by exploited means of cure. Sad it is that in these cases the medical attendant too frequently expresses his satisfaction for having thus escaped the irrational besetments of the victims of imaginary disorders. Such patients as these deserve abundant sympathy and are difficult to convince against their morbid inclinations and are cured only with great effort by ordinary officinal methods. On this unfortunate class of people the human buzzards prey with persistent eagerness and gratified glee, aided by the alluring statements and false beacons hoisted into view by selfish agents for the purpose of securing the gross gains of the soulless thrift encouraged by this form of business enterprise.

In secular, sectarian and medical publications are found too frequently alluring announcements of remedial promise, and the recital of cures that can have no foundation in real fact and which it seems to us, should be well known to those intelligent persons who assume to educate us in all things relating to the flesh and to the spirit. If these misleading statements and their deplorable outcome be not comprehended by so distinguished and earnest public servants as are these same agents of enlightenment, whose efforts in the search of knowledge and truth in the affairs of men and nations, lead them to overcome all obstacles opposing the purpose, then indeed should the duties of the editor on "serious things" be so increased as to include an essay on the fact that "nothing is more terrible than active ignorance." I beg to suggest, as an earnest of this graphic utterance of Gothe, that the essay be illum-

inated with the shadows of the unfortunate, and the results of misguided hope as pictured by the emaciated forms and mental wrecks strewn along the pathway of delusive medication. If there be any of these who are not ignorant of the disaster which their business instincts invite, to them the least I will say is: Dismiss your family physician at once and administer to your children and take yourselves the curative agents you exploit, and in accordance with the directions on the package.

The worst that might be said to this class of persons is not fitted for utterance at this time and place, and in this presence.

I will, in this connection, give an illustration of the sentiment "Where more is meant than meets the ear." Perhaps, however, it is better to say, than meets the eye—as might have been said had the expression been written near to this period of frenzied enterprise.

Not very long ago a loyal friend of mine whose loyalty to me could only be measured by her loyalty to a certain sectarian journal from which she had gained in spiritual consolation and comfort for many years, chanced to call my attention to the "high character," as she expressed it, of the abundantly illustrated "business columns." I naturally wishing to take note of so important a fact, at once scanned the announcements relating to its business purposes and to other undertakings. It required no special scrutiny to determine the presence of several exploitations of things that fasten the attention of those of inquiring minds and confiding natures; those who, while waiting for something to turn up of substantial character, invest their unbounded faith and limpid assets in problematical ventures; those whose failing health from incurable or imaginary afflictions have often experienced "the sickening pangs of hope deferred," and ventured their all, with no other gain than this. However, I will mention only one, "A Cure for Consumption," at so much "per" bottle. I inquired of my friend why it is that in a publication of this character, devoted to spiritual matters and bearing a title that means Christian effort and Christian outcome that such an announcement as this appears on its pages. She frankly replied, "Because I assume that their pres-

ence here inspires greater confidence and is followed by larger returns than when announced by the secular press." I earnestly inquired, "Do you believe consumption can be cured by medicine alone, and do you not believe that such medication as is here announced is quite likely to be delusive and even destructive because of its artful composition and misleading effect?" She, being the wife of a physician, and therefore more interested and better informed in such matters than many others, promptly replied, "Yes, I do, and I will call on the editor and see about it, for surely he either believes the statement to be true, or is not aware of its presence in the publication." Later I saw the lady again and inquired if she had seen the editor and what he had said. "Yes," she replied, "I saw him and he said: 'I am not responsible for the advertisements, as the business affairs of the paper are no part of my duty." "Well," I inquired, with a somewhat confidential, continuously curved interrogative inflection, "what are you going to do now?" "I have written him already," she replied, "that unless that deceptive consumption cure is expunged, I will stop my subscription for the paper." I wish to say, in justice to the management of the publication, that after a little time the objectionable announcement ceased to appear, but for what reason I never knew.

While writing these lines it occurred to me to examine the pages of a number of sectarian publications periodically devoted to the enlightenment and the spiritual guidance of the people. Twelve different examples were selected without reference to any consideration other than the main object in view—the ascertaining of the presence of absence in the paper of the alluring recitals to the unfortunate afflicted already mentioned. The pages of the great majority of these publications were above reproach. The pages of a small minority of them were a sad commentary on sincere religious pretension and honest business enterprise. On a page of one appeared a sensible article illustrative of the fact that "Where there is prayer there is peace." On another page of the same publication was conspicuously announced, "The curing of cancer without the use of the knife," followed by "If you are seeking a cure come here and you will get it." In another instance was noted a

three-quarter page announcement in which a list of not less than forty diseased conditions appeared, along with the assurance that in any stage of any of those diseases "The results are so certain" that gladly an absolute guarantee will be sent to any inquiring patient. The exact meaning of this phraseology is somewhat dim and is open to diverse conjecture; but that the intent is obvious and the outcome is remunerative is told by the liberal area of the space devoted to the purposes of the announcement. Among the diseases in the list were croup and Bright's disease, piles and cancer, constipation and tuberculosis, dandruff and women's diseases, along with the alluring bait, "A fifty-cent bottle free."

We all are more or less familiar with, and gladly welcome the happy inspiration that conceived the idea of tasteless, of agreeable, and of sugar-coated medication, but are we familiar with and do we approve of medication that has for its vital inspiration the misguided faith begotten by sanctimonious business enterprise?

One other instance of this nature and I am through with examples of these special shadows. In a local paper of a town and not in the list of the regular advertisements, but in a conspicuous place in the reading matter and therefore of a conspicuous price, is announced "A new cure for cancer," fortified with a certificate from a far distant state of a man who had a cancer of the lip that "seemed incurable," and "is now perfectly well." This medical agent is also guaranteed to cure cuts and burns—price twenty-five cents. I do not contend that this compound if applied to cancer will cause local harm, but surely it will not effect a cure and probably as surely will contribute to final disaster by delay of proper means of treatment, and possibly will rob the patient of established methods of benefit while chasing the delusive phantoms of hope, incited by the agents of thoughtless or of mercenary gain. The columns of many of the lay journals of the country are disgustingly disfigured with a humiliating class of notices, notices that filch from the helpless and unsophisticated their hard earned and much needed money, giving in return but renewed disappointment and often final disaster.

This form of filching is supplemented, in some instances, by one

of far lower degree, whose slimy bids for trade exact a tax on the most unfortunate of the unfortunate class that abides with us. Neither the sunshine of medical endeavor nor even that of Christian endeavor has as yet uprooted, nor more than lessoned the presence in conspicuous places of the beguiling hand-bills of these audacious vipers. Surely the failure of the efforts in accomplishing so righteous a purpose casts a fixed and almost impenetrable shadow, demonstrative of the frailty of beneficent human endeavor in the correction of such insatiable evils. The remedy for these conditions lies in the development of such a degree of moral determination on the part of all as will secure the enactment of corrective legislation and the development of an abiding courage sufficient to cause enforcement of the legal commands. I am disposed to believe that the wise and emphatic utterances of President Cleveland regarding such matters on the occasion of the semi-centennial celebration of the New York Academy of Medicine in January, 1897, can well be quoted at this time as an earnest of the opinions of all thoughtful, considerate and patriotic citizens. He said:

"You have established a code of ethics which condemns charlatanism in all of its forms, and yet ignorant pretenders roam over the land offering to perform miracles, or are located in our towns and cities preying on the weakness of the sick and afflicted, while men and women are allowed to die without medical attendance, deluded with the hope that faith will save them in their last extremity. Within the limits of your professional power and influence you seek to restrain any approach to criminal malpractice, yet newspapers disgustingly, though covertly, advertise the way to such crimes and startle their readers with sensational tales of death and misery to which they are directly accessory. I need not suggest that such evils are allowed to exist by reason of the insufficiency of our laws or the laxity in their execution. I have intimated that for this condition you are not responsible in a professional sense; but are you sure that as citizens you are doing all in your power to remedy the situation?"

The potency of these remarks is the product of the careful

thought and acute observation of a distinguished citizen whose fearless loyalty to the public interests has frequently been demonstrated in no uncertain manner.

I am fittingly reminded at this time by the sacred lessons of the greatest of all teachers, that "He that is without sin let him first cast a stone." Also, "And why beholdest thou the mote that is in thy brother's eye, but perceivest not the beam that is in thine own eye? How canst thou say to thy brother, Brother, let me pull out the mote that is in thine eye, when thou thyself beholdest not the beam that is in thine own eye?" No one is more aware than am I of the number and the magnitude of the motes and the beams in the eyes of those who profit by the unethical policy of medical journalism. No one is more aware than am I that until quite recently, the casting of a stone in any direction of the compass exposed to justifiable hazard the metaphoric eye of an offending medical journal, and possibly of a noted practitioner. The failure to recognize the essential differences between thrifty commercialism and ethical proprieties has been a blighting reproach on the ethical pretensions of our profession, subjecting us to biting jests and humiliating scorn painful to bear and difficult to gainsay. But I am gratified to be able to announce that an apparent era of consistency in this respect is at hand, and is rapidly increasing in all directions, embracing alike the personnel and the press of our profession. Let us, therefore, congratulate ourselves for ourselves because the rising sunshine of professional consistency is now dispelling the gloomy shadows of professional inconsistency that have too long darkened the path of consistent medical thought and action.

The construction of even a very brief retrospective review of the birth and past attainments of our profession requires abundant leisure, infinite patience and unrestricted access to almost numberless records representative of all nations, and of all ages, in order correctly to understand the earliest periods of medicine and surgery and the sequence of their logical development. We can do no more on this occasion than to touch lightly here and there at long distances apart along the pathway of advance, thereby fitting

us the better to appreciate the full significance of modern medical triumphs as demonstrated through the effulgent sunshine in medical endeavor. The beginning of medical thought and action is so obscure and so intimately associated with the strange conceits and fantastic beliefs of early recorded time as to make impossible the fixing of a period of commencement in established medical endeavor. Medical thought and action at that time were a part of the imaginative features of early human existence, when superstition and false philosophy dominated the actions and beliefs of men. In ancient times, the physician of a locality was its magician and conversely, as sometimes happens now in pagan and aboriginal countries. The art of healing was then regarded as most mysterious and its agents were believed to be in communion with spirits. Amulets were worn to chase away the ague, extracts from the Iliad to lessen the suffering of gout, and a verse from Lamentations for cure of rheumatism.

But do not, my friends, pity too soon these ignorant people, nor indicate by signs a doubt regarding their mental equilibrium, for neither you nor I know how many here this evening pin their faiths of cure or prevention of rheumatism to a well-worn horse chestnut deposited in the left-hand trousers pocket; nor how many experience relief from insoles made of mullen leaves; nor how many are benefited by brass rings worn on a special finger or toe, which ring extracts the virus of disease, as is asserted to be proved by the presence on the ring, from time to time, of the products of oxidation, and, pardon me if I suggest, of careless personal sanitation. Lessing truly said, "The superstition in which we were brought up never loses its power over us, even after we understand it."

An ordinary scrutiny of the advertising columns of the secular press today will furnish exhibitions of the perverse ingenuity of man, affording him ample subsistence because of the presence now of receptive beliefs like those of the earliest times.

The prescriptions of early times are a caution to modern pharmacy. Galen and Avicenna secured greater professional repute as successful physicians than is possible in our period, and, were their

famous prescriptions to be given now, it seems quite certain that more patients would succumb than receive benefit from their use. Yet in their time these prescriptions were employed with seemingly marvelous success. Do these facts suggest an absence of stability of medication, or only the presence of its fallacies?

In the second edition of a small book published in 1692, denominated the "Choice of Remedies," if found this prescription for "Convulsive Fits" and "Hysterical Vapors:" "Take the liver of a hare (if it have been hunted it may be better) and hang it up in a dry place till it is somewhat friable having a care that it is not putrific; of this reduced to powder let the patient take two or three scruples at a time, in any convenient vehicle." Also we find another cure for cancer of the breast: "Take the warts that grow on the hinder legs of a horse, dry them gently till you can reduce them to powder, of which you may give half a dram for a dose in any convenient vehicle." This latter agent had the merit of doing no local harm, even though it could be of no special good.

In this connection, I am reminded of the fact that in my early youth a fond and solicitous domestic gave me freely of grated dried pumpkin stem and molasses for the cure of colic. Whether or not the sweetened sunshine of the molasses or the insipid shadow of the pumpkin stem or the implicit faith entertained in the curative virtue of the remedy or, perhaps, only old-fashioned homely coincidence afforded the relief in this instance of medical endeavor, I am not prepared to say.

On closer examination of this little book on "Choice of Remedies," one is forced to the conviction that, indeed, much sunshine should have followed medical endeavor when attended by the dark shadows of such sickening therapy, the proper vehicle for which I am disposed to say should be the ash cart of a modern city. It should not be overlooked, however, that they did then, as we do now, the very best they knew.

The recorded growth of surgery began 3,000 years ago, and the tangible evidences of surgical endeavor antedate this period an unknown length of time. Fossil examples of prehistoric trephin-

ing done some time during the polished stone age may be cited as examples of this fact. About 1,550 years before the birth of Christ was made the following record regarding a tumor: "If this tumor goes and comes under your finger, trembling even when your hand is still, say it is a fatty tumor and treat it with the knife, after which treat it as an open wound. A work on anatomy (a true foundation of safe surgical endeavor) was in existence about 5,240 years before the birth of Christ. The Old Testament contains expressions relating to medicine and surgery. And we find, at that time, an expression that has come down to us with a pungent flavor not greatly attenuated, though highly seasoned with the smart sarcasm of the day. King Asa, "In his disease sought not to the Lord, but to the physicians." And, "Asa slept with his fathers!" In Exodus is found this statement: "And if men strive together and one smite another with a stone. * * * then shall he that smote him * * * pay for the loss of his time and shall cause him to be thoroughly healed," or, when practically rendered, shall pay the surgeon his fees.

About 1,000 years before Christ, Homer in his songs described the wounds of the conflicts of that period and the method of their treatment, which in some respects may be regarded as rational for the present time. In the fifth and sixth centuries before Christ, numerous temples erected to Æsculapius, the father of medicine, were extant, to which the afflicted resorted for relief, suggestive of the dispensaries of today. At these places, certain medical families, having presumptively special medical endowments, dwelt and treated the complaints of the callers, not in accordance with any established dogmas, but in accordance with their own individual conceptions of the means best suited for medical and surgical relief. It is likely that each individual family had its own records of remedies, of methods and of results, which were transmitted from father to son, just as one now finds in a good old-fashioned family "grandmother's recipe for cake" or for colic. And, also, perhaps, not unlike the self-constituted doctor of our day, who prescribed corn beef and cabbage for a blacksmith suffering with cramps, with instant relief, and so recorded the fact. Later, how-

ever, a minister thus afflicted called him in and was given the same treatment, but promptly died. Whereof this unprejudiced recorder of facts made the following entry in his record of endeavors: "Corn beef and cabbage is good for a blacksmith with cramps, but ain't worth a d—n for cramps in a minister."

Hippocrates, the father of medicine, born 460 years before Christ, was the offspring of a direct family of medical practitioners. Prior to his time medicine and surgery were but little advanced, and a distinct line of demarcation had not been drawn between them. Dr. Hippocrates, like some doctors of divinity, had great faith in the efficiency of fire as a remedy. The maxim of Hippocrates that "the diseases which are not cured by medicine are cured by iron; those not cured by iron are cured by fire, and those not cured by fire are incurable," was the cause of great suffering and of bad surgery—and theology—up to nearly the present century. Hippocrates and his students were prolific writers on surgical topics. They wrote on injuries of the head, on fractures and dislocations and sympathetic fevers, and many of their statements are today a part of the structure of modern established surgery. Thus it appears that the wise men of that period were able to establish enduring truths in medicine and surgery of significant importance, and, too, without the aid of the special means of analysis that characterize the bountiful period in which we live.

It may not be amiss to observe in this connection that the powers of human reasoning in diagnostic attainments are developed in direct proportion to the paucity of other means than this of reaching final conclusions in the field of differential endeavor. Conversely, inductive diagnostic attainment, if not carefully fostered, will be disabled by the vigorous assaults made on reasoning effort by use of the novel expedients employed in diagnostic aims; not necessarily because of the abundance of expedients, nor of their presence, but because it is human to accomplish a perplexing desire with as little effort as possible. The scant danger that now attends "explorative incision" is apt to encourage a degree of mental contentment, inhibiting the reasoning powers, so as to be followed, after brief and unconvincing effort, by the expression, "Oh! well, an explorative incision will settle it."

Let us now turn to a more pleasing picture, illustrative of the sunshine and shadow in medical endeavor as demonstrated by the direct results of professional effort in the alleviation and cure of preventable human affliction, during many years of toil of those of our calling. It is well to be reminded here that of one million human beings born a hundred years ago only about three hundred are now living, and they are living but feebly, cheered by the recollections of the past.

In this connection, you should be told that, during the last hundred years, the expectation of life has been remarkably advanced. The ubiquitous "King of Shadows" has been moved many more paces to the rear of the "shining marks" that he so much loves to demolish. The expectation of life in New York City in 1886, says Dr. Biggs, was only a little more than twenty-five years, while in 1903 (17 years after) for the same period the expectancy had nearly doubled, equaling quite forty-one years, and constituting an equivalent in the saving of life in that city of 28,000 lives annually. In the seventeenth and eighteenth centuries, according to Dr. Biggs, the average death rate of the civilized world was about 50 per 1,000. In London, from 1628 to 1635 (in the absence of pestilence), the average death rate was 50 per 1,000, and the absolute mortality there for twenty-four years (1620-1643) was over 70 per 1,000.

So much for shadow in medical endeavor. Now mark the sunshine. In London, in 1902, the death rate was but a fraction over 17 per 1,000. In London, from 1771 to 1780, 5 per 1,000 died of smallpox; in 1880, 2 in 1,000; in 1837, 1 in 12,500; in recent years the death rate per 1,000 from smallpox in London is expressed by an insignificant decimal.

In 1888, in the Department of Health of New York City, the initiative in the present war against tuberculosis in this country was begun. Then and for some time following, the idea was regarded by distinguished members of the medical profession of the city as being meddlesome, puerile and demoralizing and doomed to prompt and inglorious defeat. At that time the Medical Commissioner of the Department of Health of that city addressed to

each of twenty-five of the leading physicians of the city a letter inquiring if, in their opinion, the time had not come when tuberculosis should be regarded as a communicable disease and measures be taken to combat it, based on the reporting to the Department of Health by the medical profession of the cases of this disease coming under their care. From the great majority of the twenty-five thus addressed no reply whatever has yet been received. From the small minority halting replies of the "Yes, I guess not" type came to hand and to ear. But two only of the twenty-five responded promptly and in the affirmative. Physicians of lesser rank than those already mentioned amused themselves and others of high attainment and doubting method by means of cheap writings and sayings that prompted mirthful comments on the part of those with no faith and little desire to aid in the undertaking. Since that time (1888), however, the cause has made rapid progress, and physicians who then deprecated the attempt are now convinced of its wisdom and are using the weight of their eloquence and standing to secure sufficient monetary support from the city and from citizens to provide for the care and relief of the minority host of this class of sufferers. The rewards of effort thus far gained can be no better related than by Dr. H. M. Biggs, who has been among the foremost in aggressive action and suggestion of those who have engaged in the conflict against tuberculosis. Says Dr. Biggs:

"The average death rate in the Boroughs of Manhattan and the Bronx from all tuberculosis diseases for the five-year period preceding 1888 was 4.35 per 1,000 of the population, and for the five-year period preceding January 1, 1905, was 2.83, the decrease exceeding 35 per cent.; or, going a little farther back, in 1881, the rate was 4.92, and twenty years later, in 1902, it was 2.63, or a decrease comprising only these two years of 45 per cent. Translated into lives, the difference in the rates for the five-year periods, computed on the present population of Greater New York, means a decrease in the annual deaths from tuberculosis diseases of over 5,500 in the greater city."

Nor is this but a little, my friends, of what has been accom-

plished in life saving during the average age of those within this inclosure. Surgeons who labored in the hospital wards before the days of antisepsis and asepsis will recall the abundant harvest of lives and limbs gathered in by the almost omnipresent and ever-strenuous and unrecognized agents of infection. It requires no effort of mine to recall that, while as an interne in Bellevue Hospital, the presence there of pyemia, septicemia, erysipelas and puerperal fever often halted the surgeon's best efforts of relief and forbade him to employ the most approved means of operative cure under the risk of increasing the death rate of the hospital. I believe that you will indulge me if I cast on this picture of unavoidable woe the resplendent sunshine of a little of the present outcome in preventive medical endeavor.

During the last twenty-five years it has been my honor and duty to be a visiting surgeon at Bellevue Hospital, a hospital devoted to the care of the unfortunate poor of the city, those whose habits and associations, in a large proportion of cases, do not fit them for the endurance incident to disease and injury. Yet, during this time, in Bellevue, plus eighteen additional years in St. Vincent's Hospital, largely devoted to the same class of patients, I have not met with as many cases of infective diseases of preantiseptic type as came under my notice in a month's time as a hospital interne before that period. And in this connection I desire to say that each of these hospitals was as successful in treatment as were any before that dark period, and since that time are unexcelled by none devoted to the same class of cases. I can say, without fear of gainsay, that hopeless cases of injury and disease for which no practical relief could be afforded before antisepsis and asepsis are now, as the result of the practical application of these remarkable agencies, rescued in large percentages (10 to 90) by the means of established operative endeavor—and so it is everywhere. Please remember in this connection, however, that the astonishing differences in these results is the consequence of increased knowledge and not of greater assiduity nor of more thoughtful care.

Enough has been said to emphasize decidely the glorious results

in medical endeavor—of preventive medical endeavor—of the last century and a half. The brilliant sunshine of the outcome in this endeavor mingling with its unshed tears would fashion a resplendent bow of promise gloriously betokening God's choicest gifts to man.

Vaccination, anesthesia, antisepsis and asepsis, antitoxin, the X-ray, the discovery of the tubercle bacilli and of the kinship between the mosquito and the yellow fever plague of commerce, and of malarial torments, are among the most potent and far-reaching beams of sunshine in medical endeavor, and which are constantly increasing in their brilliancy and beneficent power, adding comforts and life to the inhabitants of the world, and lessening correspondingly the tears and sorrows of the earth that cast a sunless shadow on all of life's endeavors.

THE PREVENTION OF POSTOPERATIVE PARESIS AND ADHESIONS OF THE INTESTINES.

BY L. P. LUCKETT, M. D., OF TERRE HAUTE.

In choosing a subject upon which to address you this evening I have been guided by three reasons which would seem a sufficient apology for encroaching upon your valuable time.

First, that the prevention of postoperative adhesions and paresis are still factors which enter into every operation in which the surgeon invades the peritoneal cavity.

Second, that as the etiology of the formation of adhesions and paresis of the bowels, and therefore their prevention, is a very complex problem and is yet somewhat in doubt, and if this paper elicits a free discussion of this subject it can not but be of interest and profit.

Third, that one who comes in contact with patients after they have been subjected to peritoneal operations must surely be impressed with the fact that we have still much to learn before we can invade the peritoneal cavity without leaving that delicate membrane in a crippled condition in a large percentage of cases.

In these days, when to open the abdomen is an operation which is regarded so lightly by our best surgeons who are masters of the art, and in many instances by the general practitioner, whose opportunities for major surgery must, at the best, be somewhat limited, it seems to me that a warning note should be sounded, pointing out the fact that there is more necessity for the welfare of our patients than to be able to open the belly, remove an organ or growth, and suture the wound without loss of life from hemorrhage or sepsis.

We know that we have adhesions form after the most simple and uncomplicated abdominal cases, where we get union by first intention, and no rise of temperature or tympanitis during the period of convalescence. This has been proven many times by

men doing an operation on their patients the second time for other troubles.

These adhesions may only be very slight, or they may cause a band or constriction in the gut that will cause complete obstruction. A perusal of the literature reveals numerous reports of such cases, showing how common is this complication and the great variety of sites that these adhesions may occupy.

The most common form of obstruction is for the adhesions to occur between a loop of intestine and a raw surface, such as a pedical stump, or an area denuded of its peritoneal covering by the separation in inflammatory adhesions. During an operation one is apt to infer that the danger of intestinal obstruction from this cause is only imminent during the period of convalescence directly following the operation, and that if one can get the patient through the second week with the bowels moving, all danger from the complication is past.

Unfortunately, this is not always the case, as there are many cases on record where the band may cause obstruction for months, or even years, after the operation.

There is no doubt that many fatal cases of obstruction of the bowels after laparotomy are never recognized as such, and they are classed as deaths from peritonitis or intractable vomiting, especially if the site of the stenosis is high up in the small intestines. We may remove one cause of trouble and disturbance, in many instances only to substitute another which may be as troublesome to the patient as the original complaint. This occurs with sufficient frequency to cause us to be cautious in our promise to our patients as to the ultimate freedom from all pain; and in advising operations which are not absolutely essential to life the patient should be informed of this possibility.

It is not uncommon that a second operation must be done to relieve persistent pain following the previous operation.

ETIOLOGY.

Adhesions between serous surfaces take place by the exudation of plastic lymph, which acts like a cement substance, and the production of which has been excited by some disturbance of the

normal condition of the membrane. Adhesion between two raw surfaces, or between a raw surface and a serous surface, is brought about by the natural process of repair of tissue, there being a cell proliferation from the endothelial and the connective tissue cells, with the formation of a network of new blood-vessels arising from each of the coated granulating surfaces. That the formation of these adhesions is a rapid process has been proven by the experiments of Senn and others, who demonstrated that quite firm adhesions are formed between peritoneal surfaces in six to twelve hours. In recent years there has been very thorough and exhaustive experiments by numerous investigators as to the precise manner of the formation of adhesions after operative work in the peritoneal cavity, with especial reference to devising means for their prevention. The results of these researches show that all practically agree that adhesions can be produced by infection of circumscribed areas of peritoneum, but how they form between apparently uninjured and normal serosa, under perfectly aseptic conditions, is a point in question. This experimental work has yielded results in two different directions.

One set of investigators claim that the formation of adhesions under these conditions is due to infection in all cases; while the other set of observers conclude that adhesions can come about without infection. Thompson says omental and intestinal adhesions follow perfectly aseptic celiotomies. Parietal adhesions occur when the abdominal wound heals by first intention. Sterilized foreign bodies, such as gauze, may lead to the formation of adhesion if they remain too long within the peritoneal cavity, also that solutions of carbolic and salicylic acids, bichloride and biniodide of mercury, are harmful to the peritoneum, and by their irritation predisposed to the adhesion formation.

Wathard's conclusion, in the light of his work, is that the damaging influence of the air does not only depend upon its carrying infection and dust, but also that air in a state of dryness, or long continued contact with normal serosa, causes a necrosis of the superficial cells of the membrane by cooling, with resultant contraction of the blood-vessels and diminished nutrition, which

stands in etiological relations to peritoneal adhesions. Wathard believes, also, that after long contact with air the resisting powers of the peritoneum are so diminished that the number of micro-organisms necessary to bring about a fatal peritonitis is greatly reduced. His reports of 146 laparotomies for various causes showed that the peritoneum at the site of the operation was kept moist with gauze wet in hot salt solution. No wiping or drying of the cavity was allowed, and in no case was there sepsis or psudoileus. It was noticed that flatulence disappeared, in the worst cases on the first and second days, while when dry asepsis was used previously the flatulence lasted until the fourth or fifth day.

The practical application of his results would be that dry asepsis, and dry toilet of the abdominal cavity should be abandoned, and that moist asepsis, and as far as possible, protection of the peritoneum from air contact, should be practiced. It is obvious from a study of the results of the various experimentors, and of clinical experience, that the adhesions following operations in the abdomen are not due to any one of the etiological factors, but that they may form under a number of conditions, separately or in combination.

We may classify these causes under two heads, namely, Sepsis and Traumatism. When there is sepsis it may be virulent or mild in character. If virulent, we have the adhesions formed as a result of general peritonitis with lymph and fibrous exudation. If mild, it may be in circumscribed areas, only sufficient to produce a localized inflammation with a plastic exudate. If traumatism is the factor we may have a severe or mild type. If severe, we have areas in which the peritoneum has been denuded, in enucliating growths or breaking up adhesions, leaving raw surfaces. In the mild type of traumatism we have a necrocis of the endothelial cells, which, according to Kelterborn, do not reform when destroyed. The formation of the adhesion in this class of cases I believe is also by the throwing out of exudate in nature's effort to repair. We may lay down the statement that the formation of peritoneal adhesions and intestinal paresis after operation is di-

rectly proportionate through the amount of sepsis, traumatism, dry-air contact, loss of blood and heat, amount of anesthetic given, with raw surface there is present.

So much for intestinal adhesions for the time being.

It was my misfortune July 11, 1902, to lose a patient from intestinal paresis after an operation for appendicitis, and it so impressed me that from that time to the present I have never ceased working at the problem which now seems in process of solution. To prevent any occurrence it must first be thoroughly understood.

Anatomically we have to do with the longitudinal and circular coats of unstripped muscles, with Auerbach's plexus of nerves between them, and Meissner's plexus inside the circular coat. The unique effect produced upon the intestine by its exposure to the irritation accruing from the lowered temperature and manipulation incident to celiotomy is largely owing to this peculiar nervous anatomy. The intestines, while unquestionably influenced both as to motor and vasomotor conditions by the central nervous system through the splanchnics and vagi, are none the less essentially autonomous. Auerbach's plexus is, in fact, a local nervous system with two reflexes, inhibition and augmentation, and one function, the propulsion of food. The two reflexes, acting in co-operation, give rise to the phenomena which constitute the basis of what is known as "the law of intestine," namely, "if cerebrospinal reflexes be excluded, excitation at any point of the gut excites contraction above and inhibition below." Moreover, according to Bayliss and Starling the splanchnics are bearers of tonic inhibitory impulses to the intestine. These inhibitory impulses are reinforced by reflex inhibitory influences dependent upon stimulation of the sensory nerve." The same author says the most striking method of producing reflex inhibition is stimulation of the intestine itself. "If one or both splanchnics be intact the slightest stimulous applied to the intestine, even a gentle handling of the gut, suffices to produce a reflex inhibition of the whole length of the intestine," shows quite clearly how intestinal paresis may result from the most simple exploratory celiotomy in the hands of the most expert.

PREVENTION.

The fact that denuded surfaces and pedicle stumps, with traumatism, sepsis, shock, etc., were early recognized as some of the most frequent causes of intestinal paresis and adhesion, has led to many suggestions as to the prevention of these complications. It is recognized, of course, that it is impossible to prevent the reformation of adhesions after the removal of extensive adherent growths and adnexa.

As to the avoidance of sepsis, whether it be of a virulent or mild type, is of prime importance in the prevention of adhesions and paresis of the gut, it is scarcely necessary to say that the most absolute adherence to the rules and technique of surgical cleanliness must be followed. We know that it is practically impossible to absolutely exclude all germs from the abdominal cavity at an operation. For instance, the complete sterilization of the living skin is not possible, according to Harris' experiments at the Johns Hopkins Hospital. Likewise to render the air of the operating-room sterile is not feasible, so long as the operator and his assistants must breathe. Therefore it is not complete removal of all bacteria that enables us to accomplish the invasion of the peritoneum without apparent infection, but it is the resisting power of the tissue that is our aid. The less we impair the validity of the various tissues by prolonged exposure, lowered temperature, and traumatism, the less infection we will have; therefore we must not only remove all bacteria possible by methods of cleanliness, but we must also avoid lowering the vitality of the tissue by rapidity of operation; avoidance of traumatism, by keeping up the body heat, and the prevention of the desiccation incident to dry-air contact, so that the home-guard army of lucocytes may be kept active and vigorous, in order that they may repel the bacterial army of invasion which is threatening the organism.

The time element I believe to be of the utmost importance. Everything that will shorten the time of exposure of the peritoneal cavity to air contact should be employed. Technical operative skill is here essential. Thoroughly trained assistance and perfect organization and preparation play no small part in the

prevention of adhesions and paresis, by materially limiting the time of exposure of the peritoneum to the contact of the air with its desiccating and cooling effects. Unnecessary traumatism, especially of the intestines, by excessive manipulation, should be guarded against, whenever possible, by the employment of the Trendelenburg posture and the careful anti-operative preparation of the bowels to prevent their distention by gas. The avoidance of rubbing with sponges and the use of antiseptic solutions is obvious. Much handling of the bowels, as has already been said, predisposes to subsequent paralysis; and in view of the action of peristalsis on the prevention of adhesions, a very slight impediment, as a recently formed adhesion, will result in a serious and perhaps fatal obstruction if the adjacent bowel remains paralyzed for a few hours. The size of the incision should be as small as is consistent with rapid work and avoidance of traumatism. Before closing the abdomen it is necessary that all blood clots should be removed, and thorough hemostasis secured to prevent the subsequent formation of clots, as adhesions may form between an organized clot and the intestines. Ward says, "I am of the opinion that one of the most important measures for the prevention of intestinal obstruction from adhesions is the replacement of the loops of intestine and the omentum in their proper relations." As has been previously mentioned, it is the adhesion of a loop of intestine in an abnormal position that is the cause of obstruction. The filling of the abdominal cavity with hot salt solution before closure of the incision where there has been much traumatism, so as to float the intestines and thus allow them to adjust themselves to their normal position, which has been disturbed by the manipulation of the operator or by position, was first advocated for this purpose by Malcolm, of London. This procedure, I believe, accomplishes this object better than any other method, and, as it is also a powerful stimulant to the patient, it should be employed in nearly ever case.

BOSTON MEDICAL LIBRARY FEB 2 1900

Great stress has been laid upon the after treatment of laparatomized patients for the prevention of adhesion formation. The most notable measure is, probably, the employment of early

catharsis to provoke active peristalsis and thus prevent the intestines from becoming adherent. This method is of value provided that it is employed early, as we know that the adhesions form very quickly and can become quite firm within twelve hours. In actual practice it is not always possible to accomplish this result as early as we would desire, as the nausea and vomiting incident to the anesthesia, and the temporary paralysis of the bowels, which conditions are frequently present, interfere. Often the cathartics can not be retained, and should they be, they are impotent. In such cases the early use of the copious high enema in conjunction with the cathartic may do good.

The employment of oxygen to inflate the bowels, as practiced by Cleveland, must be of great value in breaking up recently formed adhesions, and may remove the previous gaseous distention of the bowels, and bring about the peristalsis and tone to the bowels, and do away with paresis.

In a most excellent article from Daniel H. Craig, of Boston, in the American Journal of Obstetrics in the April number of 1904, he says while he was equally dissatisfied with calomel and salines, postoperative, and cascara, preoperative, that the late Doctor F. A. Packard came to his aid with the report of a number of extreme cases of intestinal atony entirely and promptly cured by the use of eserine salicylate. He further says, that on studying the therapeutic and clinical side of the question nearly all of our most renowned clinicians speak in high commendation of eserine salicylate in the treatment of atony of the muscular coats of the bowels. He uses it subcutaneously, in each instance in from 1.60 to 1.30-grain doses. Eserine is the active principal of calabar bean.

Wood classes it as a spinal motor depressent, as to its physiological action; it has no apparent local irritant action in therapeutic doses.

Absorption and elimination are rapid, the latter by the kidneys. Then, being classified as a spinal depressomotor, it is seen at once that through this action it is able to counteract the spinal reflex inhibitory impulse carried to the intestine by the irritated

splanchnics. Acting as it does either upon the unstripped muscular fibers themselves or the nerve endings in them, it is able to restore lost vigor then and so overcome both sources of the intestinal paresis.

He closes his article by stating that eserine is almost a specific for intestinal atony and adhesions.

CONCLUSIONS.

The study of adhesion formation and the best means of their prevention leads one to the following conclusions:

First. That peritoneal adhesions and paresis of the bowels after operations result from several causes.

Second. That, therefore, we can not depend upon any one preventive method, but, recognizing their multiple etiology, we must employ all the details of operative technique that are necessary to offset the various causes.

Third. That this necessitates a technical skill that can only be attained by a thorough apprenticeship and a thorough training in abdominal surgery. I am well aware that many of the details that have been mentioned and emphasized here tonight are what every qualified surgeon regards as among the first principles of the technique of abdominal surgery, but they are so many, and yet so important, that a review of them and an emphasis of their individual importance can not but act as a stimulus to spur on each laparotomist to still more thorough and perfect work. As the presence of postoperative adhesion and paresis of the bowels so often eclipse the success of the most brilliant operators, the importance of their prevention, and the complex and difficult technique that this necessitates, emphasize the fact that it is only by thorough training and clinical experience that a man is competent to do such work. In my belief it is the surgeon who most conscientiously looks after all the details who will have the fewest cases of postoperative adhesions and paresis with their unfortunate sequela.

DISCUSSION.

Dr. H. O. Pantzer, of Indianapolis: The subject of the paper is one of lasting quality, and is indeed one that will be with us as long as the special branch of surgery touched upon in the paper is practiced. The very fact that a paper is written upon a subject taking up details so comprehensively goes to emphasize the importance of it. In addition to what has been said I would suggest primarily that in ordinary cases not requiring different measures the bandages should be loosely applied so as not to interfere with peristalsis. Also that the confinement of the patient in the same position after operation is something to be abhorred in ordinary cases. Some cases may call for it. But in ordinary cases let the patient be turned by the nurse—not turn themselves—as often as once in every hour or two hours. Again, I would ascribe to lack of early feeding the fact that the bowels are too long splinted down in a position and under conditions favorable for adhesions. I would take issue with the essayist in instituting an active catharsis in the early stage. I prefer to have it come by the natural processes of digestion, by feeding the patient early, even solid food. For the purpose of adding to the comfort of the patient I would early give salt solution by rectum as ordinarily practiced and in that way hope to maintain gentle and constant stimulation of paristalis.

Dr. Thos. B. Eastman, of Indianapolis: This is a valuable paper. I arise to emphasize two points. Since the use of rubber gloves has come into vogue it has been found necessary by a great many operators on account of the slickness of the gloves to use a piece of gauze between the fingers—oftentimes a very rough piece of gauze—in order to better manipulate the intestines, and I feel that this is a means of adding to the adhesions. I think this is wrong. With a proper amount of experience and skill one can manipulate the intestines without the use of this gauze.

Another thing the essayist spoke of was small incisions. I think a small incision invites intestinal adhesions. If you work in a small incision you stir up more traumatism than if you make a free incision and then wall off the intestines with gauze. An-

other thing: I think a small incision is bad because it is absolutely essential when closing up to see every point at which you have worked and to know that it is in the position in which it is going to lie when you have closed up. Oftentimes a piece of tissue which has been pulled up into a small incision will be so pinched by the muscles of the abdominal wall as to shut off what might be a hemorrhage after the tissue has been dropped back. I think the small incision is a great mistake. A large incision will do no possible harm if it is sewed up properly.

Dr. O. G. Pfaff, of Indianapolis: This is certainly a very important subject, but I think the measures we can take to overcome adhesions are very limited. When we consider the subject of adhesions we think of two things, traumatism and sepsis, and to overcome the bad effects of these involves the whole secret, Martin swabs out every case of abdominal section—the field of operation, his stump and his abdominal incision, with sterilized oil. I don't know whether it does any good or not. Morris covers his stumps and his areas of trauma with an animal membrane. He says it does good, and I have faith in his judgment. I have not tried it. Personally, I believe we can not rule out the bad effects of sepsis either with oil or animal membrane. We have it in many cases and we are at the mercy of what it will do for us. When we have a raw surface of considerable size we can cover it by peritoneum to such an extent that the adhesions are of small moment. I believe in using the large incision we will do less damage. I may say that in the past few years I have had very little trouble with adhesions.

Dr. L. P. Luckett, of Terre Haute: As to the cathartic, we may give it early and get good results, and we may not. It is a matter of choice anyway. As to the matter of gloves, I am a barehanded man myself. They have not been a success in my hands. Perhaps I have not used them long enough. As to the small incision, I do not advocate it in every case, but make such incisions as will not prevent rapid work. I do not believe in laying the abdomen wide open simply because you have a sharp knife and can. I think we can pack the bowels back through an ordinary sized median incision.

MESENTERIC CYSTS.

BY O. G. PFAFF, M. D., INDIANAPOLIS, IND.

Tumors of the mesentery, whether solid or cystic, are comparatively rare, and every case ought to be recorded. Surgical authors, as a rule, say very little on the subject, and some do not even refer to it. The solid growths are less frequently encountered than the cysts, and it is the latter to which I wish to call attention, and shall report a case from my records, together with the specimen, which I removed by operation.

Since 1507, when Benevieni made the first record of a specimen (discovered post-mortem), mesenteric cysts have been occasionally reported. From the reseaches of Moynihan, Treves, Dowd and others, we are enabled to refer to 147 cases, including the one here recorded.

They are found in both sexes and at all periods of life, cases reported so far varying from four to eighty years of age. The growths range in size from the small cyst discovered on the post-mortem table to the enormous tumors containing gallons of fluid. It is probable that many of these tumors have been overlooked, and that others have been treated without recognition. Possibly of those large abdominal cysts, with extensive adhesions and undetermined relationships in which drainage was employed, some were mesenteric.

While most of the reported cases were discovered post-mortem, many others were treated surgically, frequently having been diagnosed by those who reported them as "ovarian tumor," "pancreatic cyst," "wandering spleen," or "floating kidney." Although these growths are not common, we must expect to encounter them occasionally, and to take this fact into account in developing the diagnosis. The surprising thing is that the mesentery is not more prolific as a cyst-bearing region, when we consider that between these

two folds of peritoneum are to be found connective tissue, fat, lymphatic vessels and glands, blood-vessels and muscular fibres; also certain remnants of embryonic life from the Müllerian and Wolffian bodies and ducts, and of the Vitelline duct.

Some elaborate classifications of mesenteric cysts have been formulated by writers on the subject, but that of Moynihan has been the most generally received, although the later researches of Dowd point to a simpler and more significant system. Moynihan describes (1) serous cysts; (2) chyle cysts; (3) hydatid cysts; (4) blood cysts; (5) dermoid cysts; (6) cystic malignant disease—cystic sarcoma. Cysts arising elsewhere and becoming mesenteric by extension are excluded.

It appears that the classification may not rest securely upon the character of the cyst wall, as shown by the microscope. This is indicated in the statement of Sutton, that small parovarian cysts are lined with columnar epithelium, which is ciliated in some specimens, in large cysts it becomes stratified, and in very big cysts it atrophies. Therefore, it is not improbable that in certain mesenteric cysts, with fibrous walls and no epithelium, there has been a time when epithelial lining existed and that atrophy of this structure has occurred. Mesenteric cysts with epithelial lining have bene described by McDonald, Küster and others.

Dermoid cysts of the mesentery are relatively common, Mayer reporting one as large as an adult head, and Sir Spencer Wells another of similar size.

It is pointed out that segmentation from various organs is not uncommon. The well-known instances in which fragments are separated from the main structure during its development and lodging in some accessible haven, develops into an accessory of supernumerary organ, as spleen, kidney, ovary, etc., suggest the probable origin of many if not all true mesenteric cysts, not including the hydatids nor the cystic malignant growths.

Dowd explains the occurrence of blood cysts on the theory that they are simply preformed cysts into the cavities of which hemorrhage has taken place. Likewise the chylous cysts indicate that chyle has been effused into the cavities of other pre-existing cysts.

Demon reports a case in which a multilocular cyst exhibited one chamber filled with blood while another contained chylous liquid.

Although the pathology of mesenteric cysts is, as yet, unsettled, it may be safely assumed that the time is not far distant when we shall have all the facts placed before us.

Dowd's conclusion is probably the best presentation of the probable facts of the matter as they appear at this time. He believes that it is altogether within the bounds of probability that a separation should take place from time to time from the Wolffian body, or the germinal epithelium at an early time in embryonic life, and that it is not strange to have such portions carried into the mesentery, or mesocolon, in the course of their development, and there form cysts.

Drs. Fehleisen and Nathan, of San Francisco, removed a large multilocular cyst from the folds of the mesentery. The walls were largely composed of muscular fibres, strongly suggesting in their size and shape the muscular arrangement of the small intestine. It was considered a teratoma, and is in apparent support of Dowd's position.

While the symptoms and clinical history vary greatly in different cases, there are certain resemblances which have been so frequently noticed as to acquire practical value in diagnosis. Most of the cases carefully studied have exhibited repeated attacks of severe abdominal pain, which is intensified in walking; disturbances of digestion, which are sometimes excessive; nausea is commonly but not invariably present. One peculiar and very interesting clinical feature relates to the history of the development of the tumor itself. In numerous instances it was first noticed after a fall or some unusually severe exertion.

Dr. O'Connor, of Buenos Ayres, treated a man for over two years, during which time he suffered from serious indigestion and abdominal pain. One day he alighted with some violence from a moving street car and was seized immediately with severe abdominal pain and noticed a lump below and to the right of the umbilicus. Dr. O'Connor examined him on the same day and describes the tumor as about the size of a cocoanut, well defined and tense;

fluctuation was obtained, and apparently great mobility, but this could not be thoroughly tested on account of the great soreness present. The man was operated on and the tumor found to be a cyst of the mesentery, which was treated by drainage; it contained chyle.

Dr. Rasch, of Tottenham, England, also makes a report which suggests some relationship between violent exertion and the first appearance of the tumor. A girl, twenty-one years of age, lifted a heavy trunk, and some days after was seized with severe abdominal pain; three weeks later she went to the hospital, when a large, round, elastic swelling was discovered in the middle of the abdomen, extending to the left; no diagnosis was made; operation showed cyst of the mesentery containing chyle; the treatment was drainage; a portion of the cyst wall was excised and under the microscope was found devoid of epithelial lining.

Dr. Beach, of the Massachusetts General Hospital, reports a case characterized by soreness and pain in epigastrium after eating; eructations of gas; constipation; appetite fair; four or five months later, during an attack of colic and vomiting, a movable lump was noticed in the abdomen; the tumor could be moved from just above the symphysis pubes to a position corresponding to the right kidney; diagnosis not made, but floating kidney suspected; operation demonstrated chylous cyst of the mesentery; the cyst wall showed no epithelium.

Dr. Parker Syms enucleated a mesenteric cyst, containing fourteen ounces of pure chyle, from a young man nineteen years of age. He had suffered pain in the abdomen for two years, when a well-defined, elastic, freely movable tumor was first noticed in the median line.

Suppuration of a mesenteric cyst may occur, as was illustrated in the case reported by Dr. Ludlum of Chicago. The tumor was first noticed a few days before confinement, and was not removed until two months later, when it was found that suppuration within the cyst had taken place. In one instance a mesenteric cyst filled the sac of an irreducible inguinal hernia, surely a rare complication.

The case which came into my hands through the courtesy of Dr. Minnick, of Somerset, Ind., was of intense interest to me, and to the other gentlemen who were associated with me in the diagnosis and operation. As I know of no later case I offer this as the most recent contribution to an interesting subject. I am indebted to Dr. Bernays Kennedy for the following comprehensive report:

February 24, 1904. Miss G. N., Somerset, Ind., aged fifteen years. Weight, seventy-four pounds. (No loss.) American. Born: Indiana. Previous residences: None. Single.

Family history—A sister probably has Pott's disease.

Personal history and previous illness—Chicken-pox and whooping-cough in childhood. Always well until present trouble. Appetite fair. Complains of fulness after eating, but no nausea, vomiting nor pain. Menstruation: Never menstruated. Discharge: None. Defecation: Usually regular. Constipated occasionally, followed by abdominal cramps. No symptoms of obstruction. During the past year has had frequent diarrhea, stools contained mucous. Micturition: Normal.

Present illness—Eighteen months ago, while in good health and free of pain, patient discovered tumor about two-thirds present size in left inguinal region. The tumor was not tender and very freely movable; the patient moved it about the abdomen herself. At times she could not find the tumor herself, but the attending physician could always find it and would bring it up and out of the pelvis, after which change of position of the tumor she often experienced some relief from the pain. A few weeks after the discovery of the tumor the patient was seized with very severe abdominal cramps, beginning in the left lower quadrant and extending over the whole abdomen. These attacks were usually preceded by one or two days of gradually increasing soreness in left inguinal region, extending upward into left lumbar region. They occurred irregularly from a few days to four weeks, and lasted from a few hours to one or two days, occasionally requiring morphine for relief. The attacks of abdominal pain were not accompanied by nausea, vomiting, nor any symptoms except

severe backache. They were followed by general abdominal soreness for one or two days, after which the patient was free of pain and felt perfectly well. No chills nor increased temperature have been noted. The last attack occurred four weeks ago. The tumor was gradually increased in size about one-third since it was first noticed. Chief complaint: Attacks at irregular intervals of severe abdominal pain beginning in left lower quadrant and extending over whole abdomen.

Physical examination—Nutrition fair. The patient has a peculiar color difficult to describe. The mucous membranes are fairly well colored, but the face has an unhealthy pallor with a slight sallowness. Tongue clean. Pulse and respiration normal. Lungs, normal; heart, normal, liver, normal; spleen, normal. Abdomen: Palpation of the abdomen reveals a tumor about the size of an orange, rather firm, yet having the consistency and giving the impression of a cyst and of such extreme mobility as to leave in doubt its original site or normal resting-place. It can be moved without causing pain into any part of the abdomen or pelvis. It is not adherent to any of the abdominal or pelvic organs. There is no tenderness. The tumor is usually found below the umbilicus, sometimes in the pelvis. The most striking characteristic is the very great and extraordinary mobility. The percussion note is flat, with surrounding zone of tympany. The attachment of the tumor can not be defined. This seems to be all that can be directly learned about it.

Internal vaginal examination.—Negative. The uterus is of normal size. The ovaries can not be palpated. No pedicle nor other connection with the tumor can be traced from the pelvic organs. Kidneys can not be palpated. Urine, acid, amber, clear with slight mucous precipitate, sp. gr. 1023, no albumin, no sugar, microscopical examinations negative. Blood, hemoglobin 80 per cent. Red blood cells 4,064,000. White blood cells 6,000. Cells of normal size and shape.

Diagnosis.—The unusual array of clinical evidence was perplexing, and in endeavoring to develop a satisfactory diagnosis I placed a floating kidney of rare mobility, and a mesenteric

tumor of rare occurrence on nearly an even plane, holding rather to the idea of its being a kidney.

Operation.—February 26, 1904, with the assistance of Drs. Jno. A. Pfaff and Bernays Kennedy. Anesthetic, ether. Trendelenberg position. Median celiotomy, three inches long, extending from umbilicus to one inch above symphysis pubes. Abdomen explored with hand and a cystic tumor, size of a large orange, in the mesentary of the ileum, delivered outside the wound. No adhesions. Intestines protected with sterile pads. Tumor carefully enucleated from mesentery, avoiding gut, which lay within a quarter of an inch but seemed to have no open communication with tumor. Large vessels opposite side of mesentery also avoided. Moderate venous hemorrhage checked by ligature. Wound in mesentery repaired with continuous No. 2 catgut suture. During enucleation tumor was slightly ruptured and some of the contents exuded, of about the consistency of soft cheese, or very thick cream, with a faint yellowish tinge. Intestines irrigated with hot normal salt solution and returned to abdominal cavity. The recovery was uneventful. The microscopic examination of the tumor shows that it is a chylous cyst.

Some rare cases have been recorded in which there were no subjective symptoms at all, but, as a rule, there is a history of adhesions. Symptoms of partial obstruction are also common, and in some instances complete obstruction has occurred, constipation, eructations and occasionally vomiting. The cyst may remain stationary for a long time and then increase with considerable rapidity, or it may even retrogress. Rupture may occur into the intestine or into the peritoneal cavity. Emaciation is sometimes very marked, and death may occur from continued pressure upon the lacteals. Acute intestinal obstruction may result either from pressure or torsion. One case in a little girl is recorded in which severe abdominal pain came on during sleep and resulted in sudden death from obstruction.

Diagnosis.—There is generally a history of emaciation; abdominal pain of a colicky character, recurring at irregular intervals; constipation; symptoms of obstruction; nausea; eructation

and possibly vomiting. An elastic tumor generally in the umbilical region and a zone of tympany surrounding; very great and extraordinary mobility; tumor frequently disappears into the pelvis during palpation. I believe that in exertion and violence (and probably under other conditions as well) it has been for years resting in the pelvic cavity and being suddenly dislodged, discovery follows.

Treatment.—There can scarcely be any difference of opinion on the subject of treatment—it should be always operative. Whether complete removal, or partial excision or drainage, must depend upon the density of the adhesions, the character of the blood supply, and the condition of the patient at the time of operation. Enucleation seems the ideal operation, but if the location or size of the tumor is such that enucleation would materially interfere with the blood supply, it would be necessary to choose between drainage and resection of the gut. If the patient showed much depression, as must frequently be the case in such operations, drainage will probably be regarded as the most conservative procedure. Dense adhesions to the liver, stomach or intestine may render removal extremely hazardous.

By far the greatest importance of this subject attaches to diagnosis, or rather to a recognition of the fact that these growths are occasionally encountered, and, bearing this in mind, it is well to consider the possible complications and how to meet them.

Since writing this paper I have had the rare good fortune to encounter a second case, which was referred to me by Dr. Brown, of Brightwood, and was operated at the Deaconess Hospital, Indianapolis. This was a much larger growth and involved the mesentery of the ilium to such an extent that the adhesions being very dense and not desiring to make a very extensive resection of the gut, I treated it by drainage with apparently a very satisfactory result. In this case, profiting by the experience of my former puzzle, I was able to make a diagnosis of "probable cyst of the mesentery," which was borne out by the findings at the operation.

A very interesting case of mesenteric cyst was also recently reported by Dr. McMurtry, of Louisville, bringing the list up to 149 so far as I have been able to learn.

DISCUSSION.

Dr. M. F. Porter, of Ft. Wayne: I do not know that I can do any better in opening the discussion of this paper than to very briefly relate a case that I was fortunate enough to see during the spring just past. My case was not a cyst, but a number of cysts of the chylous variety which were encountered because of the fact that they were the immediate cause of abdominal paresis through the production of volvulus. The case was that of a young man who gave a history of frequently recurring attacks of abdominal pain lasting over a period of years. The case was finally diagnosticated as one of acute fulminant appendicitis followed by obstruction of the bowels resulting in paresis due to peritonitis. When I saw him I could make no further diagnosis than a serious abdominal lesion which had led to a pretty serious general peritonitis. The operation consisted in a resection of the bowel after opening the abdomen. Although the circulation was restored after the twist was undone, I feared to replace the bowel involved in the cyst and a resection was done. I did not want to drain him in a country house eight miles from a doctor, and again I did not want to drain on account of the multiplicity of tumors. I have forgotten how many. I am studying the case now. At any rate I concluded it wiser to resect, making an anastomosis with a Murphy button. He did very well indeed for six days, at which time he went out rather suddenly, and I have gotten no adequate report of the case since that time, except that I know there was a perforation, as shown by the post-mortem, at the site of the upper section of the Murphy button. I think the hardest question to determine in connection with these cysts is how to deal with them when we find them. That has been answered by Dr. Pfaff. Those that can be enucleated by surgery without injuring the integrity of the bowel should be enucleated. But as in the case of mine which had produced a volvulus I can not help but think the safer procedure would be the removal of the mesentery bearing the cyst together with the bowel and a subsequent end-to-end or other anastomosis.

Dr. J. Rilus Eastman, of Indianapolis: In the course of Dr. Pfaff's paper he referred to the report of a case in which a cyst of the mesentery was found to occupy the sac of a hernia. I wish to report a case which may offer a possible explanation of this very rare combination. The case was one of a strangulated hernia in the Indianapolis City Hospital. On opening the sac and examining the strangulated intestine and mesentery a cyst was found in the mesentery; but on puncturing this cyst it was discovered to be a simple hematocele in which the blood serum had been separated from the corpuscular elements. It was simply a hemorrhage, and not a cyst at all, which had been confined between the two layers of peritoneum and simulated a cyst of the mesentery. And now, unless in Dr. Pfaff's case a microscopical examination was made, and it was demonstrated that this was a true cyst, I submit it might have been like mine in which in the excursions of the mesentery through the neck of the sac, trauma may have been produced sufficient to cause hemorrhage, the blood separating into the fluid and corpuscular elements and very closely simulating cyst of the mesentery.

Dr. L. S. McMurtry, of Louisville: I only arise to emphasize what the essayist brought out, that the literature on this subject is exceedingly scant. During the late years the great activity in abdominal surgery has been so searching that it has left very little unexplored ground; but this is one of the territories in which the work has been very unsatisfactory and reports of it have been exceedingly meager. For example, by reference to the International Text-Book of Surgery will be found a paper by Dr. Christian Fenger upon the subject. We all know the thoroughness of his work and he states that the literature of the world at that time furnished less than one hundred cases of cystic tumors of the mesentery. Since that time a great many additions have been made to the literature of the subject, and in a recent text-book on surgery by a distinguished German surgeon, whose name I have forgotten, edited by Dr. Gould, of Philadelphia, the literature has been considerably advanced, and Dr. Pfaff has given a

very admirable resumé this morning. I know of no other surgeon reporting two cases. The case of mine alluded to by Dr. Pfaff was reported in the New York Medical Journal during the past winter, and from it I certainly received some very valuable lessons. In the first place, I do not believe anyone, however familiar with abdominal growths, can make a diagnosis of cyst of the mesentery before making an incision. The simulation between movable or floating kidney and cyst of the mesentery is so very great that it is practically impossible to differentiate them, and by following closely Dr. Pfaff in his reading of the paper, I received the impression that he regarded this as a kidney when he operated upon it. Although in Dr. Pfaff's cases the cysts were connected with the mesentery of the ilium they occur frequently on the left side in connection with the colonic mesentery. They are just in the region of the kidney. They can be carried all over the abdomen and simulate so closely the kidney that they are very puzzling. Floating kidney is so frequent and the other so rare that a mistake may easily be made. The case I had was in a lady sixty-seven years old. She had been seen before she came into my care by three surgeons of wide experience and skill and they had all agreed that it was a tumor of the left kidney. I thought so also. The patient's health was very much impaired and she presented very much the appearance of malignancy. It is wonderful how much disturbance of nutrition will be produced by these large tumors of the mesentery. I found a serous cyst of the mesentery, quite as large as a cocoanut. The appearance of these cysts is peculiar. It seemed the intestine went in one side of the cyst and out the other.

The enucleation of these cysts is accompanied by two great perils. First, as the mesentery is so vascular you are liable to start a hemorrhage very embarrassing to deal with; and in the next place, if you tie off too many vessels you may destroy the nutrition so as to have necrosis of the gut. The old practice of opening these tumors, connecting with the abdominal wall, draining and allowing them to close, is in a large proportion of cases more endorsed than the one pursued by Dr. Pfaff and myself.

My case was enucleated with ease and required only two or three absorbable ligatures, and complete restoration of health occurred.

Dr. O. G. Pfaff, of Indianapolis: I would like to free myself from the possible imputation of bragging on the diagnosis in the last case. The second case was much like the first, only larger, and the mobility was as excessive. "I believe we have another mesenteric cyst," I said. "We will call it a cyst anyway and we will see." So that it wasn't a clear diagnosis. I agree with Dr. McMurty that that is impossible. I only chose it as the first part of my two-horned diagnosis. I believe it was a true cyst. There was epithelial debris in the contents of the first cyst. The second one contained serum and is still in the pathologist's hands.

INSTITUTIONAL PRACTICE.

BY HARRY SHARP, M. D., OF JEFFERSONVILLE, IND.

The practice of medicine and surgery in our public institutions differs in many respects from that ordinarily encountered. When the various conditions which govern the lives of these men are taken into consideration, the results are better than one would expect. This is probably due to the fact that the physician in charge has his patients and the attendants entirely under his control, and is not hampered by any interference. He does not encounter the whims and prejudices of patients and friends that often embarrass the ordinary practitioner.

In the Indiana Reformatory at Jeffersonville during the year ending June 1, 1905, there has been an average daily population of 1,015 inmates. At the beginning of that time there were 991, and 415 have been admitted, making in all 1,406 men whose physical welfare has been in charge of the resident physician. During the year 348 have been released either on parole or expiration of sentence.

The age ranges from 16 to 30 years, and a great majority of them are men who have been reared under conditions which tend to undermine the health and lessen the natural resistive power of the tissues.

They have for the most part led fast lives, and many of them have contracted syphilis and have not received proper treatment. Their education as well as their mentality is far below the usual standard for this country, and they are incapable of looking after their physical welfare as they are of their morals. In addition to this the necessary confinement and restrictions are not conducive to health.

Every man on his admission is given a thorough examination

and a complete record is made of his personal and family history, as well as of his physical and mental condition. There is a daily sick call when any inmate who so desires may consult the physician. The average daily attendance is 48.

During the year there have been 517 men treated in the hospital. Two have died of pulmonary tuberculosis, one of tuberculous meningitis secondary to tuberculous laryngitis, one of cerebritis, one of chronic diffuse nephritis and one of pneumonia, making six in all or less than six per cent.

The hospital itself is a large three-story building of modern architecture and equipment, but I have had to depend for assistance almost entirely on inmates detailed as attendants, and who, with one or two exceptions, have had no previous training or experience whatever.

In order to give you some idea of the extreme breadth of the field, I submit the following brief statistics and comments.

SURGERY.

This branch is quite an important feature of the practice. During the year there have been 227 such cases treated in the hospital. Many of these men are not only willing but anxious to have needed operations performed and deformities corrected during their confinement when time and expense are no inconvenience to them, and it is the desire of the management of the institution to turn them out in the best physical, mental and moral condition attainable.

During the year I have done 3 successful appendectomies, 1 amputation of the arm at the juncture of the lower and middle thirds, 1 craniotomy for depression, 1 thyroidectomy, 6 herniotomies.

In these operations, as well as all those on the lower extremity, external genitals and rectum I use almost entirely the subarachnoidal injection of cocaine, and have never had any untoward effects. In all cases the patient is ready for a full meal a few hours after the operation. The analgesia is complete and the after effects are nil. My experience has been that the headache so often spoken of can be largely eliminated by allowing the patient to stand on the feet or walk about for four or five minutes until the cocaine has taken effect.

As to the method of operation in hernia, I prefer Bassini's as modified by Andrews. One mattress suture is inserted above the cord and from two to four below. These sutures are passed through the edge of the internal portion of the external oblique aponeurosis, and include the fibers of the internal oblique and transversalis muscles, thence through the shelving margin of Poupart's ligament. They are then drawn well down and tied, the knots lying on that portion of the external oblique which is attached to Poupart's ligament. The cord is then laid on the posterior wall of its new canal and the external portion of the external oblique drawn over it and stitched with interrupted sutures to the external aspect of the internal portion of the external oblique. By this means the posterior wall of the new canal is formed by the external oblique, internal oblique and transversalis muscles, and the anterior wall by the external oblique, fascia and skin. Thus the cord is entirely surrounded by the strong fibers of the external oblique aponeurosis.

Thirteen operations for hemorrhoids, 7 by ligating, 3 by simple incision and turning out the clot, and 3 by the Whitehead method. In these operations also I find spinal anesthesia superior to all others. It gives complete analgesia and relaxation to the parts. Notwithstanding the fact that many surgeons object to the Whitehead method I find it almost indispensable where the piles are very numerous, and I have always had good results from its use. Extreme care should be taken to dissect all of the fibers of the sphincter away from that portion of the rectum which is to be removed.

Two cases of necrosis of the sternum. In one of these the bone was entirely destroyed and an abscess from within the thoracic cavity was discharging through the opening.

Seventeen cases of tubercular infection of the cervical lymphatics. It is my opinion that the route of infection is through the tonsil, and I believe that radical treatment is always indicated. It has been my experience that when the superficial glands are infected the deeper chain will likewise be involved, and I therefore make a sweeping S-shaped incision, beginning about an inch below the mastoid process and ending just above and external to the

sternoclavicular articulation. After removing the superficial glands, if an examination shows the deep chain to be infected, I sever the sternocleidomastoid at about its center. I consider this much the safest course, because the structures are frequently misplaced by the adhesions, and I have often found a gland bound firmly to the common sheath of the carotid artery, jugular vein and pneumogastric nerve. The danger of injury to these important structures is greatly lessened when one has plenty of room and can work by sight. Then again one is not so liable to rupture a gland containing pus. I then either swab out with carbolic acid followed by alcohol or flush with hot bichloride, but I am inclined to favor the latter on account of the sloughing which follows the use of the acid. The cut ends of the muscle are then drawn together with a catgut and a drain inserted to be removed after 72 hours and the skin stitched, preferably with interrupted silk sutures. Great care should be exercised to remove all of the infected tissue, and you will usually find an entire lymphatic chain involved. I have removed as high as forty glands at one time. If these cases are given the proper after-treatment, fresh air and sunlight with plenty of nutritious food, the improvement in the general health is rapid almost beyond belief.

Three cases of tuberculous peritonitis have been operated on by making a free incision and flushing out with hot normal saline solution. The small pockets of fluid are gently opened up and the inflammatory material wiped away with flat sponges. One of these patients was paroled from the institution weighing 28 pounds more than at the time of operation and much improved in general health. The other two were only recently operated on, and are doing nicely so far.

At the solicitation of the patients I have served the vas deferens 8 times for the relief of troubles following masturbation and nocturnal pollution. In each of these cases I have noted an improvement in the physical and mental condition of the patient.

I have operated 6 times for varicocele by the Howse method of excision, and have enucleated the epididymis 4 times for tuberculosis of that organ. In addition to these I have also had 24 minor

accidental injuries, 1 amputation of toe, 2 plantar abscesses, 3 palmar abscesses, 1 pulmonary abscess, 47 burns, 34 circumcisions, 1 supraorbital cyst, 1 chalazion, 1 castration, 1 fissure in ano, 1 fistula and varicocele at one seance, 1 fracture right first metacarpal, 1 Pott's fracture, 3 ingrown toe nails, 2 ischiatic abscesses, 1 plastic operation for the removal of large nevus on chin, 2 lacrimotomies, 8 paronychia, 1 pariphimosis, 1 plastic operation for closure of sinus, 3 paratonsilar abscesses, 6 operations for the correction of strabismus, 1 tubercular abscess, involving the pleura and a portion of the lung from which fully 3 quarts of pus were evacuated, 2 trichiasis, 3 urethral strictures, 1 ulcerated rectum, 1 tubercular abscess of the leg.

GENERAL MEDICINE.

Under this head 290 cases have been treated during the year; 1 asthma, 4 blephoritis, 10 conjunctivitis, 1 cerebritis (died); 5 chancroid, 1 cerebral concussion, 7 diarrhea, 3 drug rash, 10 diphtheria, 1 drug addiction (morphine), 3 enteric catarrh, 5 epilepsy, 6 furunculosis, 4 gastritis acute, 9 gastritis chronic, 7 gastroenteritis, 1 hemophilia, 1 hematuria (from prostate), 1 hypermetropia, 1 intercostal neuralgia, 1 supraorbital neuralgia, 3 iritis, 3 catarrhal jaundice, 20 la grippe, 18 malaria, 1 chronic diffuse nephritis (died), 2 orchitis, 2 otalgia, 11 plumbism, 1 diffuse septic peritonitis, 1 pharyngitis, 1 plastic pleurisy, 12 acute articular rheumatism, 2 syphilitic fever, 2 syphilitic rheumatism, 1 syphilitic cirrhosis of the liver, 7 scabies, 3 typhoid fever, 42 tonsilitis, 1 tenia solium, 1 urticaria, 2 vacinia, 1 cystitis, 3 pneumonia (1 death).

Under the head of toxemia I have classified 55 cases characterized by gastroenteric disturbances with moderately high fever, due to lack of proper care of the excretory function and indiscretion in diet, which responded readily to a thorough cleaning out of the alimentary tract by the use of a brisk calomel and saline purge.

For the past five years I have been treating pneumonia with chloroform by inhalation; that is, in addition to the usual supportive method, I administer some 8 to 10 inhalations of chloroform every 4 hours.

As soon as a patient is admitted to the hospital and a diagnosis of pneumonia is made, I take an Esmark mask, drop 8 to 10 drops of chloroform on it and have the patient breathe as deep as he can. The respirations become deeper and deeper until he is able to take a full inspiration without any pain whatever, then the chloroform is withdrawn.

I find that by this method, in addition to relieving the pain, the nervousness disappears, the pulse becomes fuller and more compressible, and the patient sleeps well. The temperature falls from 2 to 3 degrees, frequently going to normal in the first 24 hours.

There has been but one death in the institution from pneumonia since the adoption of this method and that appears in the report. This death occurred during my absence from the institution, but from the record of the case I am inclined to believe that the chloroform was not begun early enough nor continued long enough to prove as satisfactory as it had previously.

TUBERCULOSIS.

During the year there has been in the neighborhood of 100 cases of tuberculosis in the institution in the various stages of advancement. Since June 1, 1904, an effort has been made to give these patients as much fresh air as conditions will permit. The worst cases constitute what we call the tubercular colony. A large ward on the top floor of the hospital with all the windows open is utilized for sleeping quarters. During the day they are on the farm outside the walls, where they do just enough light garden work to afford a proper amount of exercise.

The results have been very gratifying indeed. There have been but three deaths from this cause in an average population of one thousand fifteen as compared with eight during the previous year, when the average population was almost one hundred less. Many of these men who are in advanced stages of the disease have shown wonderful improvement, and I feel justified in saying that I believe the lives of all of them have been prolonged.

Tuberculosis has been and is yet one of the most difficult problems with which prison authorities have to contend. It does not

present the same features that the disease ordinarily encountered does. Its course is rapid in the extreme. When once the disease gets a foothold the rapidity with which it extends to the other organs of the body is alarming. This is no doubt due to the necessary confinement and lack of fresh air and sunshine. I believe the only solution to the matter is to establish suitable facilities to treat these cases by the open air method.

In addition to the above mentioned work there has been a large amount of dispensary practice for the treatment of those minor ills not serious enough to prevent the patient from doing his work. The question of handling malingerers is a particularly difficult one. Some of these men are shrewd enough to similate the disease in a manner that is extremely baffling.

Institutional practice has its advantages and disadvantages. The field is a wide one and the work is interesting. It affords an excellent opportunity to follow up and observe one's cases, and on the whole the results are gratifying.

DISCUSSION.

Dr. A. W. Brayton, of Indianapolis: A mighty good paper. It is extremely interesting to have reports of fourteen hundred men at the ages they are in our State correctional institution under the care of a physician who is interested in their real welfare and in the science of medicine and surgery. Those of us that have kept the medical supervision and doings of our eleemosynary and correctional institutions under observation for 25 years certainly have great reason to be gratified that these institutions are removed from partisan politics. The men stay in them for a long time, have perhaps sufficient salary and are supported and are men of such character and dignity that they are willing to stay there, and we are glad to have them. So many of them in the past have been so overcome with unctuous abbatial doctorial dignity, inutility, abulia and aprosexia, or, equally as bad, ignorant activity, that it is a pleasure to have a report before the Indiana State Medical Society from a physician that has been there so long and has done so well and has such scientific enthusiasm. There are a great

many features of the paper, surgical and medical, that we might discuss. I have not used chloroform in the treatment of pneumonia, nor hydrate of chloral, except in the attacks of meningitis or to relieve mental symptoms; but I was particularly gratified to hear the report on tuberculosis and the success obtained. This essay is in this respect along the line of the report of Dr. Knopf, published in the New York Medical Record, as to the condition of the New York prisons and the prison at Columbus, Ohio, and we have reason to be gratified that so much has been accomplished in our State. I think it has been pretty generally conceded that the States' prisons have not paid attention to the matter of tuberculosis in the way they are likely to do in the future. Dr. Sharp has been laboring to prevent and to cure prison tuberculosis, and has got results. He did not go into the peculiar advantages and disadvantages of his institution, and I am sorry he did not compare the medical attainments with those of the State Prison North, where they have a different climate and a different class of prisoners. I must say I am delighted with the paper and hope it may have a wide publication.

Dr. Geo. T. McCoy, of Columbus: I think, like Dr. Brayton, the paper is of more than average benefit to the Association, and I wish Dr. Sharp would give us something a year from this meeting on the same subject.

SURGERY OF THE STOMACH.

BY H. O. PANTZER, M. D., INDIANAPOLIS.

Gastric surgery within the last decade has made advances which command our consideration. It has been demonstrated:

1. That the stomach can be conveniently exposed and handled;

2. That its blood supply is unsurpassed by any other organ in the body, making it possible to incise its walls any which way, excising part or whole of the organ, reuniting the ends or making anastomosis with adjacent bowels, without detriment to healing or serious disturbance to function;

3. That the stomach can be made relatively aseptic before an operation, and, with improved technic, surgery can be accomplished about as safely as pertains to any organ in the abdomen;

4. That the results obtained by gastric surgery make it a legitimate and desirable remedial recourse for most mechanical and organic diseases of this viscus;

5. That it is a potent remedy for the prevention of cancer of the stomach. It accomplishes this by aborting diseases, notably ulcers of the stomach, which, in recent light, constitute the etiologic or anatomic basis for cancer (Fuetterer);

6. That for cancer of the stomach, surgery alone promises something.

It can not be within the scope of this paper to describe the different operations, to discuss their relative merits, or to consider the differential symptoms indicating them specifically. It must suffice briefly to show the scope of gastric surgery by enumerating some of the most important operations in use today, and some general considerations therewith connected. The operations are, namely:

Gastrolysis, a name applied to separating adhesions of the stomach to neighboring parts, which create pain and functional disturbance.

Gastrorrhaphy, or suture of the stomach, undertaken for perforation by ulceration, stab wound or gunshot wound.

Gastroplication, which reefs the elongated walls in simple (non-obstructive) dilatation of the stomach.

Gastro-hepatic and gastro-splenic plication, reefing of the gastro-hepatic and gastro-splenic omentum for the uplifting of the stomach in prolapse or so-called gastroptosis.

Gastrotomy, incision of the stomach, specifically called for as an exploratory measure, and for the removal for foreign bodies within it or within the lower œsophagus, or duodenum, and for the treatment of ulcers, hemorrhage or stricture in these parts.

Gastrostomy, the establishment of a fistula for feeding in cases where feeding by mouth is impossible, as, for instance, in stricture of the œsophagus, or for bougie treatment of œsophageal or pyloric stricture.

Pyloroplasty, an operation to remove a stricture of the pylorus.

Pylorectomy, a resection of the pyloric end of the stomach when it is the seat of a benign or cancerous tumor.

Gastrectomy, the partial or total removal of the stomach for cancerous tumor.

Gastro-gastrostomy, establishing communication between the compartments of an hour-glass stomach.

Gastro-enterostomy, connecting the stomach with the small bowel, thereby providing a new outlet for the stomach contents, when the pylorus is obstructed, or is not effective owing to deep sacculation of the stomach.

The different operations and their modifications, their shortcomings and their relative merits, while of acute interest to the srugeon, need not be dwelled on here. A few general phases may be considered. The good results obtained by gastro-enterostomy where it was desirous to provide prompt drainage of the stomach have led to its adoption in some cases hardly qualifying to a strict rule for its indication. The ardor displayed in this direction recalls the practice engendered at an early time of pelvic surgery. Illusive hopes carried by safe pelvic surgery, at one time advocated oophorectomy for almost all the ills of women. The immediate

outcome did much to justify this course. When the full returns came in, however, there was a reckoning which in time formulated safe indications for operating. As a consequence, pelvic surgery today is one of the most advanced and useful branches of the healing art. Similarly, gastro-enterostomy has had, and it may be said still has, its "boom." Much valuable material is being collected and sifted for its yield of true science.

We should recognize that gastro-enterostomy has been overestimated and overdone. Cannon and Blake[1] recently have published very interesting experimental observations showing that some of the fundamental conditions prevailing during the digestion and propulsion of food within the stomach have not been duly regarded in devising various gastric operations. Notably they demonstrated that "gravity drainage" is a delusion, and that gastro-enterostomy without complete pyloric closure is prone early to become ineffective.

Among the unfavorable effects following gastro-enterostomy is the development of peptic ulcers in the part of the intestine immediately adjoining the stomach. The production of this ulcer is ascribed to the acid stomach contents striking the alkaline bowel, where it is not protected by neutralizing fluids, as in the duodenum, which is provided with the alkaline secretions from the pancreas and liver. Many such cases have been reported in recent literature, some with fatal issue, others attended with suffering not different from that for which the operation was undertaken.

Robson[2] truly emphasizes the fact that the operation is, though an important one, still only an incident in the treatment. Internal treatment after operation should be continued until the hyperchlorhydria present in most ulcer cases, and other evil tendencies are corrected.

The writer, in his work, has been able to obviate the dangers attending gastro-enterostomy by the ordinary methods, by an anterior duodenal gastro-anastomosis. Disseverance of the duodenum from the pylorus, complete closure of the pyloric opening, anterior implantation of the duodenum into the antrum as close to the pyloric opening as the thickened ulcerated area permitted, is

the simple procedure which practically re-establishes natural relations. In a case operated May 31, 1904, the immediate and ultimate results have been most satisfactory. The patient was presented to the Indianapolis Medical Society six months later, and its perfect result attested there. Strangely this simple procedure is nowhere mentioned in literature, as far as I could find. It would seem to have merits which, where it is applicable, should give it preference over other methods. A brief report of this case will be appended to this paper.

The difficulties attending gastric therapy—and by this is meant both medical and surgical treatment—arise from our imperfect understanding of the diseases of the stomach, and from the consequent inadequate differential diagnosis. The differentiation between a pure neurosis, local or reflex, or a toxæmic disturbance of the stomach and a local structural lesion, may, in some instances, for a time at least, be impossible. Clinically, the diseases of the stomach, the duodenum, the biliary vessels, and the pancreas are intimately associated. The mucous membrane is continuous through all these organs and topically and physiologically they are so closely related that the disturbance of one organ readily involves the others. Many of the symptoms and signs are common to all. Differentiation between disease of these organs at their early stage, until recently, was little possible or even attempted. A clear reading commonly awaited the last stage—when hollow-eyed death unfolded a baneful mystery. Great advance has been made in the diagnosis and differential diagnosis of stomach diseases. Increased knowledge, thorough early physical examination, and the aid from laboratory methods make diagnosis possible in many cases. The Mayos claim diagnosis is possible in 80 per cent. of the cases. This probably pertains to cases at the late stage when the surgeon gets to see them. An error in diagnosis may yet be no practical fault, as, for instance, when at an operation pyloric tumor is looked for and gallstones are found. The increased safety of gastric surgery—at its highest when these cases are brought early to the operator—should stimulate our efforts. Nowhere is co-operation of internist and surgeon more happily

pleaded. The opprobrium attached to bad surgical results really rests upon both. Cases submitted to the surgeon when the pale flag of death is wafted from the bedside, redound not to the credit of either.

At an early stage of pelvic surgery, the exploratory incision was a beneficial expedient in cases of doubtful diagnosis. Here, as there, it serves a useful purpose in developing our diagnostic knowledge. It should be considered where the possibility of a cancerous disease must be entertained, yet the physical signs of such are wanting. Waiting until the latter are unmistably recognizable commonly sacrifices all hopes of a cure.

The diseases of the stomach which can be successfully treated by surgical measures may be classed under two heads, namely, benign and malignant. Under the head of benign diseases occur (1) ulceration and its complications and results; (2) gastroptosis, prolapse of the stomach, so called; (3) uncomplicated dilation of the stomach, known as gastrectasis; (4) spasm of pyloris; (5) scars following caustics, as when lye or acids have been swallowed; (6) mechanical injuries and foreign bodies in the stomach.[3] Under the second head comes cancer.

Ulcers and their complications and results constitute the majority of stomach diseases indicating relief by operation.

Primary ulcer of the stomach is largely treated successfully by internal and hygienic measures and properly belongs to the domain of the internist. Recurrent and obstinate cases, those developing complications, consequently should receive early the joint attention of the internist and the surgeon. Quite a number of the latter are curable alone by surgery.

Acute and subacute perforation of gastric (and duodenal) ulcers can recover by expectant and medical treatment. But this recovery is so remote and uncertain as to make it imperative to operate at the earliest possible moment. The risk of operation is definite and small in degree. The hazard of delay is immeasurable. With everything prepared to speed the operation and limit shock, opening the abdomen, finding the ulcer, sewing it, and mopping the abdomen, is sufficient in many cases, and is done with little extra

danger. Excision of the ulcer, extensive flushing, and providing multiple drainage is rarely found indicated, especially in cases operated early. Early means at once; not when peritonitis and sepsis prevail. The possibility of this occurrence should be had in mind when acute abdominal pain is ushered in with symptoms of collapse and contracted abdominal walls, and where a history of chronic gastric disturbance is given. The following case has illustrative merit:

G., Illinois, male, white, age 39, seventeen years ago had evidence of perforating ulcer, followed by grave peritonitis and six months' invalidism. Has suffered abdominal soreness, pain and colic ever since, though gradually he regained his former weight. Within the last year he suffered great gastric pain, indigestion, vomiting and emaciation. More recently he developed distension of abdomen and œdema of limbs.

Diagnosis—Hour-glass contraction of stomach with tumefaction and adhesion to anterior abdominal wall. Cancer? Exploratory incision found inoperable cancer of stomach and mesenteric glands.

This case shows that perforation though not immediately fatal, was followed by prolonged suffering and invalidism, and finally consequent development of cancer.

The portion of the duodenum above the point where the alkaline biliary pancreatic fluids are discharged into the duodenum partakes physiologically of the characteristics of the stomach, and clinically the two are so intimately associated that for practical purposes they should be associated here. The conditions within the stomach favoring the development of pyloric ulcer also affect this part of the duodenum within which ulcers form.

The hemorrhage from an acute gastric or duodenal ulcer is characterized by spontaneity, abruptness of onset, rapid loss of a large quantity of blood and marked tendency to spontaneous cessation. A recurrence of this hemorrhage is so rare, and where it occurs is usually of small amount and its cessation before a fatal condition arises, so common that by authortative concensus, these cases ordinarily should be primarily submitted to medicines, rest and ice bag.

The hemorrhage from chronic ulcer may vary within the widest limits of frequency and quantity. In all cases of hemorrhage or chronic ulcer an operation ought to be performed. Life and health are menaced directly, and by the ultimate consequences. The search for and local treatment of the ulcer or ulcers, and the ligation of the vessel in hemorrhage or the excision of the ulcer if possible, is indicated. Where such is not feasible, gastro-enterostomy or gastro-duodenal implantation will prevent a recurrence of the hemorrhage and by the favorable effect drainage has upon the ulcer, lead to its cure. The search for the ulcer causing the hemorrhage has oftimes been unsuccessful. At times in the dead it has been impossible to find the site of the ulcer until the microscope revealed it.

Recently F. Gregory Connell[4] reported a case where gastro-enterostomy failed to stop the bleeding, and adduces other cases from literature. Mayo thinks gastric ulcer should be surgically considered when its dietetic and medicinal treatment has been tried and yields no permanent result, and especially so if secondary complications, such as obstruction, dilatation, adhesions and deformities have developed.

HOUR-GLASS STOMACH.

This is caused by perigastric adhesions; by ulcer with local perforation and anchorage to the anterior abdominal wall; by chronic ulcer, generally at or near the middle of the organ; by malignant disease. The interesting procedures amenable in the differential diagnosis of these conditions can not be considered here. The operation for the relief of hour-glass stomach depends upon the seat of constriction and the secondary changes thereupon. When the constriction is near the pylorus, a dilated cardiac pouch and a small pyloric loculus is present; when nearer to the cardia, two approximately equal pouches, or a large pyloric and a small cardiac pouch are formed; there may be two constrictions present. The following operations may come into question: Gastroplasty, which by resection removes indurated or constricted portions of the stomach; gastro-gastrostomy or gastro-enterostomy which connects the

two pouches of a constriction located about the middle of the stomach, either with one another or with loops of small intestine, or perhaps both may become necessary; partial gastrectomy.

The results of the mechanical surgical treatment of ulcer and the consequent pyloric obstruction and retention are gratifying first as to the relief afforded the patient, and, second, as to their comparative freedom from danger. Thus, Robson's statistics, given by Murphy, are 101 cases of posterior gastro-enterostomy with 3.9 per cent. of mortality, and 20 cases of pyloroplasty without a death. The deaths were largely due to the extremely low condition of the patient at the time of operation.

Gastroptosis, treated with reefing, Beyea's method,[5] has yielded most gratifying results in eleven cases reported by its originator.

Uncomplicated dilatation of the stomach is doubted as ever existing. Thus Munro and Bottomly[6] say they have yet to open the abdomen as an exploratory measure in cases with symptoms of gastric stasis and find no pathologic or mechanic cause for the trouble.

J. T. Bottomly advises exploratory incision as an early routine measure. The danger is regarded as practically nil, if the patient is in good condition. This holds true, even if gastro-enterostomy is done.

Spasm of the pylorus, where not amenable to medical and dietetic treatment, further experience is likely to show, has some local pathologic basis. Exploratory incision here must be recommended.

Scars following caustics should be had in mind. A case of this kind was operated with excellent permanent result by the writer, in 1892. The patient had swallowed a hot morsel of meat six years previously. Two years later there developed symptoms, construed by the patient's medical attendants as cancer. When I saw the patient four years later, she had become addicted to morphine, was bedridden and had general anasarca. A stricture near the œsophagus was found and treated. Complete recovery.

The stomach is the seat of cancer oftener than any other organ in the body. The relative frequency is variously computed from

25 to 33⅓ per cent. Cancer of the stomach is curable alone by surgical recourse. Its cure is dependently, largely, upon the timely recognition of the disease.

Exploratory incision should come in requisition often. Regarding the results of operation for existing cancer. Murphy asks the question, do they justify us in hoping for much better results in the future. He answers in the affirmative on the following basis, supported by statistics:

1. There is a small percentage of unquestioned permanent cures already secured, notwithstanding delayed or tardy diagnosis.

2. Life has been materially prolonged in the cases in which the operation was not performed in extremis.

3. The suffering of those who survived the operations of radical removal was materially less, as death was caused by the metastatic growths rather than by the recurrence of the disease in loco.

4. The price in mortality is not too great for the profit in longevity and freedom from suffering.

5. The future will give more fruitful results, with increasing earlier recognition of the disease and our greatly improved technic.[7] [8]

That the number of permanent cures will increase may be estimated from the accessibility of the primary location of the disease, namely, the pylorus. Miculicz[9] states that results are unsatisfactory, (1) because patients do not seek advice soon enough, but (2) mainly because a sufficiently radical operation is not done.

Great improvement in permanent results is promised by taking advantage of the "solated" area from cancer, demonstrated by Moynihan.[10] This immune area, located at the fundus, remains immune because of the peculiarity of the distribution of the lymphatics of this region, whereby practically no lymphatic glands occur in this region. The isolated area can be preserved in gastrectomy, making the operation less difficult and much safer, and all the rest of the stomach can be safely removed. This permits the surgeon to go wide of the primary focus, thus diminishing the liability of recurrence in loco, or in the adjacent glands.

The writer within the last week had the pleasurable visit by a

former patient upon whom he had operated five years ago. A growth taken from the pylorus by free excision was examined by Dr. Wynn and found to be malignant adenoma. The patient continues in good health, though subject to occasional attacks of headache, associated with her stomach and liver.

ANTERIOR GASTRO-DUODENAL IMPLANTATION FOR PYLORIC NON-MALIGNANT TUMOR—CASE REPORT (ABOVE REFERRED TO).

Mrs. J., white, 35 years old, was referred to me by Dr. Wm. F. Molt, of Indianapolis, Ind., in February, 1904. For the past eighteen or twenty years the patient had pain and nausea, occasional vomiting, coming on after eating. Patient states she was never robust, owing to the stomach difficulty. During the last three years pain, nausea and distention of stomach, culminated in attacks of great severity. The vomitus was excessive in quantity, extremely sour, revealing no undigested particles, and sometimes containing blood. After such attacks patient experienced a brief period of relief. Bowels always constipated during past years; stools commonly colorless, at times, particularly during attacks, contained blood. The skin a pale brownish yellow. No fever or cough. No œdema.

Status præsens. Patient looks much older than age given, is emaciated and dejected. Pulse weak, 100, temperature slightly subnormal. Chest negative. Stomach distended with fluids and gas, reaches below umbilicus. A hard tumor, size of chicken egg, is felt in epigastrium and right hypochondrium.

Diagnosis—Pyloric stenosis owing to chronic ulcer. Malignancy entertained.

Under short rest in bed, irrigation of stomach and feeding exclusively by rectum, patient gains in color, form and spirits. Operation proposed and accepted before this, now is rejected. Patient passed into other hands. According to her statement, she was treated by several physicians for catarrh of the stomach and bowels. I next saw patient late in May, 1904. She had emaciated to mere skin and bones, looked like a woman of 70 years. The stomach now practically filled her entire abdomen. No œdema,

no ascites. Dyspnœa from weakness. The general condition seemed to preclude an operation, and the possibility of malignant changes further clouded the prospects. Preparatory treatment was given as before, but this time was little effective and soon given up because it seemed to squander time and strength.

Operation at St. Vincent's Hospital, May 31, 1904; chlorform; lavage of stomach.

Median incision, six inches long beginning one inch below ensiform cartilage. Stomach, pale and thickened, occupied greater part of the abdomen. Intestines remarkably atrophied from disuse. The dilation of the stomach proper to the right of the fixed and indurated pylorus, displaced the former to the right so as to simulate a stricture at this point. The thickened pylorus appeared typical of inflammatory infiltration, and in the absence of enlarged glands, no extension of the growth to adjacent parts, no ascites, was decided to be non-malignant. The duodenum was anteriorly somewhat adherent to the stomach—as though nature were attempting a Finney pyloroplasty, i. e., gastro-duodenostomy. The duodenum was easily released from its adhesions to the stomach and dissevered from the pylorus beyond the limit of ulcerous infiltration. The pyloric opening would have barely passed a goose quill. The pylorus was sutured with continuous Lembert silk suture, and a few enforcing sutures. The duodenum and stomach were easily approximated at a point on the anterior surface of the latter, just beyond the infiltrated tissues. The stomach was opened by a longitudinal incision equal to the full stretch of opening of the duodenum. Held by a guy rope at each end carrying both stomach and duodenal walls, the union was effected by one continuous silk suture through all layers, enforced by a few interrupted sutures where the two ends met. Closure of the abdomen without drainage. Duration of operation, thirty-five minutes. Patient suffered no shock, and but little pain at any time after the operation. Feeding by rectum for two days. Then panopepton was given by mouth. Patient vomited slightly, in all three times, at different periods. The wound healed by primary union. Milk and toast diet was given on tenth day. Bowels became nor-

mally regular, stools were normal. Three months later there appeared at my office a buxom woman, in whom I could not recognize my former patient.

Examination revealed a stomach of normal dimensions and location; there was no evidence of tumor; rather, there was found an abnormal extension of stomach resonance to the right.

Three months ago the patient was exhibited to the Indianapolis Medical Society, and the finding as above verified. I have seen the patient lately. She reports that she does not know that she has a stomach, and that she is enjoying better health than at any time since womanhood.

BIBLIOGRAPHY.

1. Cannon and Blake, Gastro-enterostomy and pyloroplasty. Annals of Surgery, May, 1905.

2. Robson. Annals of Surgery, August, 1904.

3. B. G. A. Moynihan; Medical News, June 6, 1903.

4. Connell. Annals of Surgery, October, 1904.

5. Beyea. Phil. Medical Journal, February 7, 1903 (Practical Medicine Series, November, 1903.)

6. Munro and Bottomly. Boston Medical and Surgical Journal, August 4, 1904.

7. Murphy. Practical Medicine Series, Vol. 4, 1904.

8. Murphy. Practical Medicine Series, Vol. 11, 1905.

9. Bergmann—Miculicz's Surgery, 1904.

10. British Medical Journal, April 25, 1903.

THE ETIOLOGY AND PATHOLOGY OF RHEUMATISM.

BY W. H. PATTON, M. D., OF ORLEANS.

The most common and probably one of the most essential diseases, and one in which we have a certain routine of treatment, is rheumatism and its analogies.

From time immemorial the etiology is "uric acid diathesis," and without more perfect and exact researches it will remain as "uric acid diathesis" one hundred years hence, without knowing the causation or productive cause of uric acid.

That we may have a more vivid conception, the ingesta and chemical change which takes place during digestion in both stomach and bowels, and the power of absorption and utilization of same, when carried into blood stream and lymphatics, which completes the metabolistic changes in the tissues: The first step, beginning from the ingesta of food, to the metabolism in the tissues. The second step, from the changes in the tissues to the excretory channels, viz., kidney, skin and bowels.

As has been stated, the exact nature of the production of uric acid is unknown; but that there is a faulty metabolism associated in some special way with the chemistry of uric acid we know, but nothing more. Uric or lithic acid is rarely absent from the urine of man or animal, though in the feline tribe at times it is entirely absent and replaced by urea. The proportional quantity is variable in different animals. In the herbivorous, acid is very scant. In the granivorous, no urea is found, being entirely replaced by uric acid, but in birds and serpents is very excessive. My reasons for speaking of different animals having and not having uric acid is to try and show that because there is uric acid found, or not found, in the blood and urine does not constitute or prove that rheumatism is present in all cases when uric acid exists. So often

in the granivorous class, when their food is almost entirely free from nitrogenous elements we may still find them suffering from rheumatism, while the carnivorous is rarely seen to have the same, and subsist wholly on nitrogenous food.

There seems to be slight exception in man, though if we keep a record of cases we can not say that rheumatism exists in greater per cent. of heavy meat eaters than those that consume smaller amount of meats and subsist on fruits and vegetables.

Whether we attribute rheumatism to a class of patients that have consumed large amounts of nitrogenous food, we do find that the quality of uric acid like that of urea in human urine is increased by the use of animal food, and decreases by the use of carbohydrates, or by exclusive vegetable diet.

In more febril diseases and plethora it is formed in unnaturally large quantities, and in gout it is in the form of urate of soda, of which the so-called chalkstones of this disease are principally composed.

The excretion of uric acid in the urine, by Garrod, was "that there was an increased excretion of uric acid in the urine, both in acute and chronic rheumatism," which now is not confirmed by our best authors and writers. By recent analysis it is found that the daily excretion of uric acid in the intervals between acute attacks ranges within same limits as does the excretion of healthy individuals.

In chronic gout, in which there is a deposit of biurates in tissues and joints, there is no hyperacid in the urine, and in many cases the blood shows no abnormal reaction, and holds the same alkalinity. During and preceding an attack there is a diminution in the amount of uric acid elimination, whereas during and following an attack there is an increase in acid elimination. While this held true by the majority, it is denied by others, which indicates that this variation is due to the power of kidney of one patient to excrete the overproduction, and on the other hand a deficiency in the resisting power of the patient to eliminate.

At this particular time if blood analysis is rendered in the patient that fails to eliminate by kidneys, you will find an abnormal

amount of acid in the blood, and in the patient who shows an abnormal amount of uric acid, in excreta, will find normal alkalinity of blood.

It is possible to draw a different conclusion than that of defective kidney. Supposing that two patients have the same eliminating power, but the blood plasms of one may have a greater affinity for rendering soluble the production of uric acid, the other has less affinity for same. In the latter the kidney would have to overcome the deficiency by excreting the overproduction, which would involve the epithilial lining, thereby producing an acute inflammation. Upon the analysis of the blood, we find the difference in reaction would lead us to suppose that the material or direct cause would be faulty digestion or assimilation.

The theory that agitates our minds mostly as to productive cause is whether the nuclein or nitrogenous particles are thoroughly broken up during assimilation, or whether there is a deficiency of alkaline reagents in the plasms to neutralize the acid, or whether the kidney is made to produce the chemical changes that are necessary to prevent the acute nephritic inflammation that often leads to Bright's disease. As we study more carefully each individual case of the disease which confronts us, I think we can hardly help being more and more inclined to the conclusion that we have to deal either with some form of more or less direct external intoxication or with some impairment of the normal digestive or assimilative processes of the body, resulting in abnormal poisonous products being formed in the alimentary canal; or in excessive absorption of the toxic substances which are normally present in the process of digestion.

I believe that our study will be confined more to the nature of diet, power of digestion and assimilation, by making tests of blood, urine and stools. This theory may seem absurd, yet it requires but so little study and patience that any practitioner may be able to make blood and urinary analysis, which is so essential.

As uric acid is present in the system of every individual in some secretion and in some form, either in solution in blood, or crystals in urine, salts in stones or tophi, we should not over-

look the primary cause, because it is a disputed question, or because the task is arduous, for the treatment of rheumatism is as variable as the treatment of febril diseases. In my personal observation I have known the acute rheumatic pains to come at regular periods during the day, especially after meal time, from one to three hours while digestion was being performed, and more especially when bowels become flatulent, from fermentation of food, due to intestinal indigestion. Also have in mind a patient that has the above symptoms, with additional symptoms of palpitation of heart and excessive dyspnea from diaphramatic pressure, and more especially acute pain in lumbar region, and represent it not as rheumatic pain, "characteristic of pain in joints," but as though from direct pressure on lumbar plexus.

As the above symptoms were present from one to three hours after meal time, it proves to us that autotoxication was present before the toxemia could have reached the renal organs. In like instances it not only proves that the blood is heavily laden with toxic poisoning, but makes like impression on nervous system, whether it be the sympathetic or direct cause. Have also noted that the acute pain may be relieved by emptying the colon by enema, which is noticeable within a few moments, yet to return within six to eight hours. While, should a cholagogue be given, and thorough evacuation followed, sufficient toxic poison will be eliminated to render patient comparatively easy for period of twenty-four hours or more. I believe that in the future our study of the diet of a gouty patient will be with reference to the detection of substances which, either within themselves or in the conditions of nutrition obtained in the cells of his intestinal wall or possibly liver, are capable of producing intestinal putrefaction and autotoxication.

It is claimed by some writers that uric acid is nontoxic, yet all of us have observed at the bedside, "which is the only practical discernment," that a patient is taken with chill and rigors, which must have been produced from toxic infection.

When the system becomes thoroughly saturated with acid, then at once the acid is thrown down in the form of deposit, and every

tissue, lymphatic and organ receives the same, which produces more or less congestion, and chill immediately follows. This deposit takes place in parts where the resistance is lessened by deficiency of blood current to the part, as the cartilage, synovial membranes, etc. For this reason we have the tophi, or calcareous deposits in the gouty subject in the extremities, where greater resistance is present and the metabolism restrained.

As has been stated, the science and etiology of rheumatism is one complete, uninterrupted cycle of facts, and when and where to break that cycle and to be able to reason from a given point is at the present time almost an impossibility.

Therefore, if this be true, I beg of the society that they may excuse the lack of chronological symphony that we so much like when able to reason from cause to effect.

Rheumatism often simpulates other diseases and other diseases rheumatism, and while bearing upon this fact it is well to note the liability of diagnosing it as local or multiple neuritis in the early stages. We are taught by many authors that there is a hyperesthesia on pressure over the affected area, which certainly is not an infallible rule.

I have in mind one of the most marked and typical cases of neuritis that came under my observation, that was thought to be of rheumatic origin in the beginning that proved to be neuritis as the disease progressed. The pain was of paroxysmal character and required morphia hypodermatically to amount of 4 grains in 3 hours and 20 grains chloral per rectum, which gave from 1½ to 2 hours' sleep. At no time was there hypersensitiveness along the affected nerve, but pressure over crest of ilium or region of sciatic notch mitigated the pain to some extent. Yet in most cases pressure over affected area elicits pain, which only teaches us that one of the most prominent symptoms in differential diagnosis is sometimes wanting. In neuritis and rheumatism alike heat, redness and swelling, accompanied by lancinating pain, may be present; yet any of those symptoms within themselves is not sufficient to warrant the differential diagnosis of either disease; but if on section of the medullary nerve fiber in

acute stage of neuritis the gray substance would reveal inflammatory action, whereby a transformation or structural change had been wrought, that necessarily makes pressure on the axon that gives the burrowing, burning pain common to the disease.

Should the inflammatory action continue until the protoplasm of the nucleus destroys the axis cylinder, and through the loss of inervations the muscular tissues waste away, then the diagnosis is made clear by impaired motion, sensation of coldness of surface, and atrophy of member.

While there are many symptoms that are pathognomonic to rheumatism and neuritis alike, it only enhances our liability to error in diagnosis that materially plays the happy medum to our success. That these errors may not occur, every practitioner should acquaint himself with the use of the microscope and analytical tests, and at the same time observe the stage of the disease and the environments that surround his patients.

As for treatment of the disease, it would be impracticable to try and enumerate the remedies, which would mean most all belonging to pharmacopea, most of all antiseptics and alkaline digestives, electricity as stimulus to nerve and muscular fibers, copious draughts of mineral water and baths suitable to disease, and live a quiet, even kind of life.

In other words, I can express it better by using the witty paradox of Moxon: "It is quite as important to know what kind of a patient the disease has got as to know what kind of a disease the patient has got."

DISCUSSION.

Dr. A. C. Kimberlin, of Indianapolis: In the first part of Dr. Patton's paper he confined himself to the chemistry of rheumatism and allied ailments. Of course, we are all aware of the fact that certain by-products of metabolism produce a set of symptoms which simulate rheumatism. However, rheumatism of this character is more frequently of the neuralgic variety, and not the true articular or inflammatory variety. The question which interests most especially is as to its etiology, as to what extent it might be considered what it supposedly is, infectious. There are reasons

to believe that in articular rheumatism we are dealing with an infection, which has not been demonstrated certainly yet. But we are confident it is an infection for many reasons. In the first place is the prodromal stage, which we so frequently see, behaving much like other infections. Secondly, we regard it as infectious because of the fact that it shows a special selection in attacking the joints; not always confined to the ligaments and membranes, but to the joints themselves. Too, we can not but regard rheumatism as being somewhat akin in its nature to pneumonia. Pneumonia, as we know, is a constitutional disease which gives evidence of its effects in the lung, while rheumatism confines itself to the articulations or joints. We find this so frequently shown by the so-called complications. Perhaps first of all and most important is that of inflammation of the lining membrane of the heart, or endocarditis. It is hardly fair to consider it as a complication always, for the persistency with which it obtains justifies calling it a symptom quite as much as the inflamed joint or the temperature curve. Possibly 50 per cent. of our cases, if carefully examined or followed up subsequently, will give evidence of endocarditis. It is not strictly confined to the joints, while it produces its effects upon them. Certainly, it is distributed through the system through the lymphatics, the blood, or whatever channels might carry it.

Now, I know hardly what to add as to dietetic influence as an etiological factor in the production of rheumatism. We know there are many predisposing causes—age, occupation, climate and various others—but certainly we can not get away from the fact that is an infection of some kind. How frequently we see an attack of articular rheumatism following an inflammation of the throat. They come to us frequently with throat symptoms that do not yield to local or constitutional treatment, yet you give the salicylates or alkalies and they get better. Certainly, there must be some association between this route of infection and the inflammation of the joints called articular rheumatism.

Dr. W. C. White, of Indianapolis: There probably never was a more unfortunate thing than the way in which the term rheu-

matism is applied to such a varied group of troubles. What we know usually as rheumatism we have constantly before us. We have the acute articular rheumatism, then we have the form of rheumatoid arthritis, and again the chronic cases of gout that shift around year after year, and are known as chronic rheumatism among the most of us. And there is no clearer fact today than that there is a sharp division between gout and acute articular rheumatism on the one hand, and between gout and rheumatoid arthritis. Acute articular rheumatism is a disease that clears up and leaves the joint free from disease and is dependent directly upon an infection. One who is familiar with the British journals can not have escaped the work of Byington and Paine, who have been publishing so much matter on these acute articular troubles, and we can not read their articles without being impressed with the faithfulness and trueness of their work. One really could not want much more than to get case after case of a micro-organism which they can take again and produce acute articular rheumatism in rats and monkeys. That looks, indeed, pretty much to be relied upon. And yet here comes along Cole, of Baltimore, who takes another variety of streptococcus—two or three varieties—and he finds with these that he can produce just as typical cases of acute articular rheumatism time after time, and also typical endocarditis. As I said before, acute articular rheumatism clears up and leaves the joint just as free as it was before. The questions Dr. Patton has been considering, it seems to me, belong to gout and not to acute articular rheumatism. The question of uric acid in the blood and in the joints and in the excretions—that is another question altogether. The question of uric acid deposits in the joints or the tophi in the ears is a question of gout, which is as distinctive a process as any of the other clearly defined processes which we have going on in the body. So that when one considers the question of rheumatism it seems to me necessary to define whether we mean acute articular rheumatism or those conditions grouped as gouty.

Now the question of the retention of uric acid in the blood or the amount of uric acid excreted is very variable, not a fixed

question. There have been running through the Journal of the American Medical Association a group of articles among the editorials for the last ten or twelve editions that have been dealing with the subject of uric acid, and they have summed up all the work of recent years on the question, and one can not help but be disappointed in reading these articles, because it leaves the question as in the old Scotch verdict—not proven. Whether there is a retention of uric acid or an increased production, one is not able to say certainly, but one thing is certain, that the nucleins in foods, such as the pancreas, the kidneys and the different organs of the body used for food, and certain vegetables, such as peas, beans, etc., produce increased excretion of uric acid, and the amount in the urine is increased greatly. That has been proven, but the estimate of uric acid in the urine, such as we are accustomed to make in the laboratory, is a very unreliable thing to go upon.

Dr. A. S. Jaeger, of Indianapolis: When we understand and consider the self-limited course which acute articular rheumatism runs we can not get past the fact that it is a germ infection or an infection by micro-organisms. I think we make a mistake in attempting to make a distinction between acute and chronic rheumatism. I do not think there is such a thing as chronic rheumatism. We have the effects of the acute condition, but we do not have it going into the chronic form. This point I have proven time and again to my own satisfaction. Now, the presence of uric acid is not important, because by the time the uric acid is formed the damage is done. It is secondary. I have treated a few cases of rheumatism. I let the system take care of the uric acid. We give a bland diet, of course. We would in any other infectious disease. The preponderance of opinion is that it is not an infection, but I think the latest investigators have proven beyond a doubt that it is an infection.

Dr. L. P. Drayer, of Ft. Wayne: I think the time is ripe for the medical profession to recognize this one fact, that acute articular rheumatism has definite prodromata, a definite symptomatol-

ogy, definite sequela, and that it is an acute infectious process caused by a specific infection. It is an unfortunate thing that medical men will try to consider an acute process such as this from a chemical standpoint. It has been demonstrated time after time that when a patient's body is surcharged with uric acid and urates that he may be relieved almost immediately by an additional quantity of urea in some form or another. To Dr. Walsch, of New York city, belongs the credit of introducing this subject, and at the New Orleans meeting he read a paper on "The Passing of Chronic Rheumatism." At the meeting were the best men in the country, and with Tyson and Anders present no one dared to stand before the society and say there was such a thing as chronic rheumatism.

Dr. Theo. Potter, of Indianapolis: It is really unfortunate that the term rheumatism has come to be applied in such a way as it has. It is applied both popularly and professionally to a whole series of aches and pains involving the locomotive apparatus and fibrous structures of the body, until really the term means absolutely nothing. It is applied to affections which are evidently toxemias. That group of disorders which complicate tonsilitis, scarlet fever, diphtheria, gonorrhea and the whole list of infectious diseases may have affections of the fibrous structures and of the joints, to which the term rheumatism is applied. These are really cases of arthritis. We do not know exactly how they come about, but this we know, so far as we can know in the absence of specific diagnosis, that they are not the same thing as rheumatism. Their pathology is not the same; their clinical history is not the same; and the treatment especially distinguishes acute articular rheumatism from that whole group of affections. And so with chronic rheumatism. It is a chronic arthritis, which is entirely different in its clinical history and treatment. And so with the so-called gouty affections. Then there is a series of disorders, the seat of which is the nervous system, to which the term rheumatism is unfortunately applied. For example, sciatic rheumatism, which so commonly misleads, and which in the majority of cases has nothing to do with rheumatism at all. While

it is true that we are not yet certain just what acute articular rheumatism is, we believe more strongly that it is an acute infection. We ought to limit the term to that particular disease and then speak of arthritis, gonorrheal, post-scarlatinal, etc., for so long as we go on applying the term gonorrheal rheumatism, sciatic rheumatism, etc., so long will we mislead ourselves in the line of therapeutics. The time has come to limit the term to one particular disease, and when we do that we shall at least have started on the road toward a more accurate diagnosis of many of these other things.

Dr. W. H. Patton, of Orleans: I hope not to take exception to anything said, and while I have heard the discussion and have read some of the latest articles on rheumaitsm, for me to try to think that chronic rheumatism is a disease separate and distinct from acute articular rheumatism, it is a theory rather hard to believe, for this reason: I do not know of any symptom that is common in chronic rheumatism, except as an exaggerated condition of the acute. For instance, we have pain in the joints, muscular soreness and slight stiffness in the acute form, whether articular or muscular, and as the disease progresses on and on it becomes chronic, and we have the anchylosis and the tophi deposited within the system. And while I am not disputing that the acute could not become chronic, there must be a cause, and there must be uric acid, and whether it produces the rheumatism, we have the same conditions in other cases, and I do not think of a case that does not give a history of once having an acute attack. And I would like, if we had time, to have a few symptoms how we diagnose the difference if we never had the acute disease,

SCIATICA.

BY JOHN LITTLE MORRIS, M. D., OF COLUMBUS, IND.

In all probability one of the most troublesome diseases to relieve and cure is the condition usually designated as sciatica, and whether it confronts the family physician or the specialist this class of cases is as a rule unsatisfactory and the physician is very liable to get discouraged, and certainly the patient.

The term sciatica is misleading in the sense in which it is originally used, and does not describe the essential condition which confronts us. In a tabulated list of two hundred cases of pain in the sciatic nerve and its branches, eighty per cent. are proven to be sciatic neuritis, and the remaining twenty per cent. can be considered under the two heads, sciatic neuralgia and sciatic rheumatism. The term neuralgia according to Foster's dictionary, is "a nervous disorder characterized solely by pain." Neuritis is designated as "an inflammation of a nerve or its sheath, and its branches." The symptoms that make up the diagnosis of neuritis are tenderness on deep pressure over the nerve, disturbance in the function of the muscles supplied by the nerve, atrophy of muscles, and disturbance of electrical response. Sciatic rheumatism may occur after a case of general rheumatism, or in one who is predisposed to rheumatism. However I do not believe that it is possible for rheumatism to be confined to the nerve alone, hence when we find a case of so-called sciatic rheumatism, it will be found to be more or less muscular in character, including the muscles of the thigh and back. In fact these cases may at the very first, have been a sciatic neuritis, and owing to the disturbance of the nutrition of the muscles, especially in patients who have had a previous attack of rheumatism, the rheumatism begins in the muscles, and it would be more proper to call the condition sciatic neuritis, and the muscular symptoms, constituting simply an attendant muscular rheumatism.

In order to make a careful study of pain in the sciatic nerve it might be well to review the anatomy of the nerve and its branches. The great sciatic nerve starts in the sacral plexus of nerves, which is formed by the lumbro-sacral cord, the anterior divisions of the three upper sacral nerves and part of the fourth. They all unite into a single broad, flat cord, triangular in shape, its base being towards the sacrum, and its apex at the lower part of the great sacro-sciatic foramen. It rests on the anterior surface of the pyryformis muscle, and it is covered in front by the pelvic fascia which separates it from the sciatic and pudic branches of the internal iliac artery. The branches of the sacral plexus are six in number: Muscular, inferior gluteal, superior gluteal, pudic, small sciatic and great sciatic. The muscular branch supplying the pyryformis muscle arises from the first sacral nerve before it enters the sacral plexus. This anatomical fact will be noted further on in this paper.

The great sciatic nerve supplies the muscles of the back of the thigh, the leg and foot. It is three-quarters of an inch wide and passes out of the pelvis through the great sciatic foramen, beneath the lower border of the pyryformis muscle, descends about midway between the trocanter major and the tuberosity of the ischium on the back of the thigh to about its lower third, when it divides and becomes the external and internal popliteals and supplies the parts around the knee joint, and the internal popliteal becomes the tibial, and supplies the foot and heel.

Sciatica is more common in men than in women. Some authorities claim as much as four out of five cases, and others, sixty-five per cent. My own practice has shown five women to twenty-one men. The prevalent age is between thirty and sixty, seldom after sixty, and never before puberty. The liability of the condition depends on climatic conditions, occupation, mode of living, and liability to injury. The purely neuralgic form of sciatica is oftentimes closely associated with pregnancy, lactation, and diabetes.

The cure of sciatica has long been a source of trouble to the therapeutist. Many methods have been in vogue and had their day, and it has seemed what will cure one case will fail in the very

next one we meet. Surgical intervention has been used in the form of neurectasy, or nerve stretching, which is accomplished by dissecting down upon the trunk of the sciatic nerve, just below the pyryformis muscle, and stretching the nerve by manual force, exerted on a plane with the course of the nerve longitudinally, sufficient to raise the foot from the table, by the pull on the nerve upwards and towards the patient's head. I have seen this operation done several times, and the few cases I have been able to follow demonstrated that the results were unsatisfactory. The osteopathic treatment is also a nerve stretching procedure, being accomplished in various ways by manual force. This treatment fails for the same reason that neurectasy fails; these cases need something more than nerve stretching. Deep injections into the substance of the nerve has been tried, using chloroform, iodine, ether and other drugs, but this method has long since been discarded as unscientific and of no avail as a curative measure. Actual cautery has also had its adherents, principally because an occasional case has responded to this measure. There is only one class of cases wherein this procedure would be indicated, and that is in those hysteroid cases, which have the pain never twice in the same location and even in both hips, and with whom every expedient has been tried; then, and then alone, would it be expedient to resort to this extreme measure, and only then for the psychic effect. Heroic doses of castor-oil have been recommended by Moyer, and although this has succeeded in some cases, it certainly will not do as a routine treatment. Hot baths, cold baths and applications have been lauded and used very extensively, and either may act as a sedative, but it is doubtful whether any cures have resulted from these measures. Electricity has many enthusiasts, and they advise all the different forms and technic of applying this modality, continuous, interrupted, sinsuoidal, static wave, violet ray, high frequency, leuko-descent ray, and even the X ray have been recommended for the cure of sciatica. Before the days of mechanical vibratory stimulation, I relied almost entirely upon the static wave, which did not meet the requirements. Patients frequently had to be removed from the chair, as they

insisted that it made the pain greater, and in those cases which were benefited under this treatment—and they were generally the cases with general nervous symptoms—the length of time necessary, and the small gain noticeable from day to day, both by patient and physician was enough to discourage the general use of this modality. It is difficult to keep a victim of sciatica with a smile on his face and a look of gratitude for the physician unless we are doing something for him that he can see as well as the physicians. Many failures in curing sciatica have been due to the physician wasting his efforts trying to stop the pain by the use of analgesics, antirheumatics, etc., and paying no attention to the anatomical changes that may have occurred and are the direct cause of the pain.

EXAMINATION.

To make a careful examination in a case of pain in the sciatic nerve and its branches, we should have sufficient of the clothes removed so that we can see at a glance the entire lower extremities and the back up as high as the cervical region; in other words it is impossible to make a thorough or an intelligent examination in a case of suspected sciatica by the subjective symptoms alone—we must also rely upon the objective symptoms to a large extent. The physician who makes a diagnosis in a case of pain in the region of the hip on the mere subjective symptom of pain is not getting at the seat of the trouble, and if he treats the patient on this basis, he is going it blindly and in a manner that will not redound to his credit nor to the welfare of the patient. The proper way to make an examination, to find out the cause of pain in this region, is after the patient is stripped so that we can see his lower extremities and back at a glance, have him lie prone upon his belly on a level operating table with his limbs straightened out as much as is possible, and oftentimes a simple inspection will give in this position some idea to the examiner of the causative factor in question. Oftentimes a bulging of the belly of the pyryformis muscle will be noticed on the affected side, and pressure on this muscle downwards will at once produce pain in the sciatic nerve and its branches, because of impinging the trunk of

the sciatic nerve against the edge of the great sciatic notch. You will also be impressed with the feeling of tightness in this palpation which will be absent on the opposite side. In a list of two hundred cases treated in the New York clinic, of pain in the sciatic nerve, it was possible in over ninety per cent. to demonstrate an appreciably contracted pyryformis muscle. It will be recalled in the earlier part of this paper that I referred to the fact that the nerve supply of the pyryformis muscle was from the first sacral nerve and above the origin of the sciatic nerve. This anatomical fact can account for those cases where the pylyformis muscle is found contracted, and yet no injury of the muscle or other cause of interference in the nourishment of the muscle; yet the contracture of the muscle is sufficient to cause pressure on the sciatic nerve, therefore any irritation at the junction of the last lumbar with the first sacral vertebra must necessarily cause some disturbance of the pyryformis muscle, because of interference with its nutrient nerve. Remembering how the pyryformis muscle, as it spreads over the great sciatic foramen and comes in close contact with the great sciatic nerve at its exit from the great foramen, and it is easy to see how any change in the shape of the pyryformis muscle, on account of interference with its nutrient nerve may and will cause pressure on the sciatic nerve with all its attendant symptoms. Pressure contracted here will not alone interfere with the main body of the nerve, but will also interrupt the circulation in the perineurium and the arteria comes nervi ischiadium, the artery that enters the sciatic nerve itself and furnishes the blood supply for the substance of the nerve.

A careful examination of nearly every case of sciatica will demonstrate a condition known as sciatic scoliosis, literally a lateral deviation of the spine, and if that condition is discovered no importance is usually attached to it, as it is usually supposed to be due to the efforts of the patient to hold himself in as comfortable a position as possible and carry himself there. This is not, however, the entire cause of scholiosis. The intense pain in the nerve, when the pain begins in the nerve, and a great amount of consequent irritation will cause the muscles in the lumbar region to

contract and tilt the pelvis up one side or the other to a greater or less degree, and the tilting of the pelvis increases the irritation of the muscles, and this further increases the contracture of the muscles, and then you might say that we have a vicarious cycle, and there is no beginning and no ending.

There is another class of cases in which the first lesion is muscular contraction, with production of a tilted pelvis, thus causing irritation to the sciatic nerve. These cases usually begin as a lumbago, and the sciatic inflammation does not begin until later. Causative factors in this class of cases may be constipation, injury or heavy lifting or heavy work. These things cause irritation of the spinal and sympathetic plexuses of nerves and they irritate the muscles so that they tilt the pelvis and when the pressure and contraction becomes great enough the pain will appear in the sciatic nerve.

Most of these cases which absolutely fail to reach a cure under medical treatment can be cured if the examiner makes a correct diagnosis as to the causative factor, and then makes an intelligent effort to eliminate the cause. The detection of the irregularity or deformity is an easy matter if the proper method is pursued. Place the patient on his back and have him lie as flat as possible and relax all the muscles of the lower extremities, and then bring the heels together, so that the point of contact will be on a plane drawn through the body longitudinally bisecting the symphysis pubes, internal condyles, and the internal malleoli, when it will be found that there is a difference in the length of the legs, which may run from half an inch to two inches in extreme cases. To further make sure of which is the affected leg, flex the leg on the thigh and rotate inwards and make palpation on the inner side of the anterior superior spine of the ilium, and on the affected leg, tenderness and some thickening will be apparent to the touch.

TREATMENT.

The treatment that I rely upon at this time, and have for three years, is mechanical vibratory stimulation, exclusively. This method offers more than any other treatment advocated for

the relief and cure of sciatica that I have herein mentioned or in others which I have tried. It also has one desirable feature not before met with in treating sciatica, and that is it will in every case give temporary relief, and if used intelligently give permanent relief. In two hundred cases treated in the New York clinic, treated by this method and none other, only three cases required more than ten treatments. I have in my own practice, in sixteen months, discharged twenty-six cases of pain in the sciatic nerve as cured. These cases are all within my reach, and so far as I have been able to learn there has not been a single case of return of pain.

The action of mechanical vibratory stimulation on a nerve is as follows: Applied to a nerve or plexus of nerves composed of spinal and sympathetic nerves, especially as are found in the interspace between the transverse processes of the spinal column, with a moderate pressure and a medium length stroke for from five to twenty seconds, the impulse transmitted is stimulative in character, and by the aid of the rami-communicantes is transmitted to both posterior and anterior spinal nerves, and is further transferred through these nerves to their terminal nerve endings. With a long stroke and deep pressure, long continued, for a period of from thirty seconds to two minutes, the effect is to inhibit the nerve, and this impulse is carried along in like manner to the terminal nerve endings, and this is so in both cases, stimulation or inhibition (depending on the manner of applying the vibration), whether the nerve be motor, sensory or nutritive.

The method of treatment by mechanical vibratory stimulation is as follows: The first consideration is to relax all tight and contracted muscles. This is done by inhibiting their nerve supply as outlined above, then after the pressure is removed, the next desirable result is the relief of pain, which with this method is an easy matter, and can be achieved by applying the vibratode over the trunk of the nerve at the sciatic notch, making deep pressure, with a long stroke for a period of from thirty seconds to two minutes as seems necessary, and the pain will cease while on the table, lasting in the first treatment usually several hours,

and later become permanent, after all pressure has been permanently removed. When there is no contracted muscle or no tipped pelvis, it is well to treat methodically all the interspaces the entire length of the spine beginning at the first cervical vertebra and continuing down to the sacral, with a longer and heavier stroke over the last lumbar sacral and over the sciatic notch, and even following up some of the branches of the great nerve in the thigh and leg; then the patient should be turned on his back, and stimulative vibration be given to the affected leg, beginning over the femoral artery and the largest branch of the lumbar plexus, the anterior crural nerve at the base of Scarpa's triangle and following through Hunter's canal.

To reduce a tipped pelvis, first have the patient lie on his belly and relax all the lumbar muscles, and if he has a short leg turn him on his back and relax his pelvic muscles, and then turn him on his side so that his short leg is uppermost, then flex the upper or short leg on thigh and the thigh on the abdomen, and the knee placed against the operator's shoulder, then place one hand on the anterior superior spine of the ilium, exerting pressure downward and backward, and the other hand on the tuberosity of the ischium, making pressure downward and forward; exert strong pressure with both hands and body until you feel pelvis give, and you will find on again measuring the length of the legs as described above, that the pelvis has been moved a considerable distance.

Case I. Man, age 45. Occupation, blacksmith. History: Two years ago had an acute attack of inflammatory rheumatism, from which he recovered after a siege of about three months; about six months since he began to have pain in his knee, which he immediately thought was a return of his former rheumatism, in fact he informed me that he had taken treatment from a physician for "rheumatism," pain was so severe at times that he walked with a limp, and again it would disappear and as suddenly reappear with great severity, lasting for irregular periods.

Examination: Patient was examined in the usual way indicated above for anatomical irregularities. Spine seemed normal

in both muscles and bones. The first glance at the gluteal region showed a prominence over one pyryformis muscle; pressure upon this muscle at once produced his characteristic pain at the knee, and, with the exception of the tenderness produced by heavy pressure over the pyryformis, it did not produce pain at any other point down the nerve; there was no swelling nor discoloration of the knee. Incidentally, the patient told me that his former physican had never examined his back and had only grasped his knee at one time through his trousers.

Treatment: Mechanical vibratory stimulation was used over the lumbar and sacral interspaces and muscles, and over the pyryformis muscle for about five minutes. This treatment was given three times every other day with positive relief after the first treatment, and after six months of hard work there has been absolutely no intimation of any pain of any description.

Case II.—Man, age 50. Farmer; had been the victim of sciatica for over two years, had been treated by osteopath, electricity, hot-air baths and medicine, in fact, I myself gave him electricity in the form of the static wave and hot-air baths for a period of three months, with no results except to aggravate the condition.

Examination: He walked with an extreme limp, and at times went on crutches; pain was present practically all the time and very severe in the entire leg and lumbar region, so severe that he had resorted to morphine as a last resort. The pelvis was tipped to a remarkable degree and a comparison of the relative length of the two legs showed a shortening of two inches and a half in the affected leg, with marked tenderness all over the entire leg, back, and especially on the inside of the thigh anteriorally.

Treatment: He was given mechanical vibratory stimulation daily for ten days, and several efforts were made to replace the tipped pelvis, but owing to the inability of the patient to flex his leg upon his thigh it was unsatisfactory, and after two months' treatment at irregular intervals, I had reduced the shortness to one inch and had completely stopped the pain, and it has re-

mained so for three months, but he walks with a limp, and always will. However, I really believe if he had had the benefit of mechanical vibratory stimulation during his first year of suffering he could have been cured.

Case III.—Mrs. M. Age 38, mother of five children. History: Had phlebitis, or "milk leg" after fourth child, and since that time always had trouble with this leg, and about one year previous had begun to have pains around the hip and extending down the leg, which had greatly increased in severity; had only taken medical treatment.

Examination: There was a shortening of the affected leg of one-half an inch; the lumbar muscles on this side were also tight and tender, numerous varicosities abounded from the middle of the calf up above the knee.

Treatment: Mechanical vibratory stimulation, used every other day for ten days, applied over the lumbar muscles on both sides and over the sciatic notch on the affected side, and the brush treatment used over the entire calf and thigh. Three months after discharge she came to my office and said that she had succeeded in achieving a woman's greatest ambition—raising a great dust "cleaning house"—without any inconvenience whatever, and for the first time for several years.

Case IV.—Mrs. P. Housewife. Age 35, mother of seven living children; had also had "milk leg" after one confinement, and had suffered almost continuously since then with pains, beginning in calf of leg and gradually getting more severe in the hip, until now she walked with a cane and a distinct limp.

Examination showed a tipped pelvis, and the affected leg one and one-half inches short. Numerous varicosities were also noticeable to a great extent from the ankle to the midthigh.

Treatment: Mechanical vibratory stimulation was used for fifteen treatments, and one effort was made to reduce the tipped pelvis after the fifth general treatment, and with complete success. She was discharged after the fifteenth treatment as cured, the varicose condition was much lessened, but she was advised to wear a silk elastic stocking as a support for these very large veins,

These two last cases show that this condition of septic phlebitis after childbirth may be followed in years or even months by a sciatica, and in both cases the effect of the treatment was an allayment of the condition in the veins, but certainly not a cure.

DISCUSSION.

Dr. W. C. White, of Indianapolis: I wish to call attention to two factors in the question of sciatica which have proven of really great value to me in the last few years. The first is what we ordinarily call sciatic cases, with pain along the sciatic nerve and down the thigh, are very often due to arthritis deformans of that especial variety known as spondylitis, or changes going on in the intervertebral discs, which are very likely of an infective nature. Indeed, when any case of chronic rheumatism comes to you, if you can find out that the rheumatism has persisted and that the doctor told the patient that it was strange that the rheumatism didn't clear up, that he never saw a case last so long, you should get down your latest books on rheumatoid arthritis and see if it does not belong to that group of cases.

There is another group of cases with pain along the sciatic nerve and along the thigh and in the knee which gives a history of having lain in bed for a surgical cause—a break in some bone—or for some long illness. Goldthwaite, of Boston, has given the key to a great number of these cases. I have seen good results from the treatment he advocates. This second group of cases Goldthwaite has defined as a stretching of the sacrosciatic ligament. The sciatic nerve arises immediately over that region, the pain being referred along the nerve. Now the treatment for both these cases is to put them up in a plaster jacket. Rest of the ligaments is secured, and in the spondylitis cases, in which the pain increases under movement, we get good results. I am sure if you will try this treatment on some of the cases that come to you, you will have gratifying results.

Dr. L. P. Drayer, of Ft. Wayne: If you will find some of these cases of sciatica in which mechanical vibratory measures do not relieve, take a rectal speculum, dilate the rectum and relieve polypoid growth or piles and relieve them.

Dr. C. S. Bond, of Richmond: I had a case a short time ago that set me thinking. I had a gentleman 40 years of age who said he had sciatic rheumatism, and it seemed from the examination that he had sciatica; but if I had treated him without making a further examination I would have made a great mistake in the matter. As a matter of fact the man gave no history of ever having any disturbance of the urinary organs. He passed about a normal quantity of water, and without making a careful urinary examination I thought he had no disturbance at all. But on examining the urine it had a specific gravity of 1,050 and quite a quantity of sugar. I believe we have no sciaticas *per se* outside of those coming from direct traumatism. When a boy I fell on my left hip and had a sciatica for three years, and I know the pain and distress that comes from this trouble. I am inclined to think it is a traumatic symptom. Dr. White has called attention to some of the causative trouble. The blood certainly has something contained in it always that makes disturbance in the most susceptible nerve, whether the sciatic or the intercostals, and it takes a careful examination in every particular to be sure your sciatica is not dependent upon some one of these numerous causes of disease. The difficulty is to differentiate. For instance, in cases of myelitis we have shooting pains down the limbs, or one limb, for two or three weeks in chronic cases, and you will be doctoring the patient for myelitis or complicated conditions of the spinal cord. And in tabes, lightning pains go down the limbs, and you may be mistaken. It is a state of disease from the cord, and in that case you would have been neglecting a very important matter, because these cases are in 85 per cent. due to syphilis, and the vibratory treatment might do him harm. In myelitis, of course, you would do harm. It involves the very underlying principles of medicine. In cases of Bright's disease it is not unusual to have these nerve pains. It is the only expression nature has for calling attention to the fact that there is something the matter with him, and it is due to the fact that some underlying condition of nutrititon, or otherwise, is wrong. The diagnosis of these cases is exceedingly difficult.

Dr. Theodore Potter, of Indianapolis: There is the old saying that pain is the cry of the nerve or blood. Which means that back of the nerve pains, as we call them, there is usually something. I think that any careful study of a considerable number of cases of sciatica will impress this fact strongly on one's mind, that in the vast majority of cases which we call sciatica there is something behind the sciatic nerve that is wrong, and the thing to do is to try to find out what it is. When we come to study the things we find back of the pain in the sciatic nerve in these cases we quickly and easily place them in two groups: The toxic things, the forms of poisoning, and the traumatisms; or local and constitutional things that irritate in some way the sciatic nerve. And so I am accustomed to say to medical students in the clinic, in the presence of a case of sciatica, to always remember to do two things above everything else; to make an examination for those things that may produce general poisoning, and a careful local examination, and these two things having been done, the case will clear up. Locally we may find disorders of the spinal column, of the pelvic bone, exostoses, affections of the rectum, piles, rectal ulcers, disorders of the urinary organs, in the pelvis, bladder, the pelvic organs in women; these disorders furnish causes of sciatica; and then the second group of disorders, the constitutional poisoning of Bright's disease, diabetes, cirrhosis of the liver and that group of degenerations which bring with them the toxemias. If one overlooks this important fact that back of the chronic sciaticas that persist for days and weeks and months, there is likely to be something producing a poisoning or irritation of that nerve, whatever relief he may temporarily get, he will be very apt to be disappointed in the real cure of the patient. I have within the last year met two cases which were at once cleared up by the discovery of diabetes. It is not uncommon, as Dr. Bond said, for such patients with nephritis to complain of neuralgic pains about the head, brachial, sciatic, etc. These two things we want to bear in mind: The great majority of cases are easily explained by some discoverable local disorder or some constitutional disease like Bright's disease, etc.

Dr. A. C. Kimberlin, of Indianapolis: Whether we regard sciatica as due to mechanical or toxic causes it is interesting to the general practitioner to note the vast frequency with which we see it on the left side, as compared with the right.

Dr. Morris, closing: I attempted in my paper to differentiate between sciatic neuritis and sciatic neuralgia, and gave the symptoms of the two different conditions. They are exactly different, and this condition of sciatica, coming with diabetes, Bright's disease, etc., is not a neuritis, as you can demonstrate; it is a neuralgia that will be cured by correction of the underlying condition. The only cases which are not thoroughly examined, not only in regard to the urine, but in some cases as to the blood, are those where the examination is made after they are treated to relieve the pain. One of my ideas in presenting the paper was to insist on the fact that most of these cases escape us because we do not make a thorough examination, and it strikes me that this is one of our weaknesses that the osteopaths live on. There wouldn't be any excuse on earth for their living and succeeding if they didn't have to make an examination absolutely thorough in order to make an impression the first time.

MEMBRANOUS CATARRH OF THE INTESTINES.

BY ROBERT HESSLER, A. M., M. D., LOGANSPORT, IND.

The morbid condition generally called membranous catarrh of the intestines and characterized by the passage of slimy or membranous substance from the bowels, by abdominal pain, and by various disturbances of the alimentary tract and the nervous system, is an affection that is still ill-defined; little is known about the pathology, practically nothing regarding its etiology, and writers have not even agreed on a name. The synonymy is something wonderful. A study of the literature is interesting in many ways, but in this paper I shall give only a brief review, first in regard to the history of the affection and how it has been differentiated, next a mention of some of the recent writers and their views. After this follows a brief account of the affection as I have seen it.

Historical. Paulus Ægineta, among the last of the old Greek physicians, speaks of the passage of mucus from the intestines. Moragni the Italian, about 150 years ago, mentions the passing of mucus at times in the form of ribbons or tape. Van Swieten, more than a hundred years ago, studied the affection in Vienna under the name of glutinous diarrhea. Mason Good, of England, nearly a hundred years ago, described it under the name of tubular diarrhea. Sireday of France, in 1869, described several cases, and came to the conclusion that it was a functional disturbance, a neurosis.

Da Costa of this country, in 1871, gave the first classical description of the affection, in the American Journal of the Medical Sciences. He regarded it of nervous origin and recognized the importance of and advised the use of diet, exercise and fresh air. Whitehead of England, in the same year, described it as mucous disease or mucous affection of the intestines; he insisted on proper

diet, quality rather than quantity, and the importance of exercise. Leyden of Berlin, in 1882, directed special attention to its occurrence in Germany, where from now on it was extensively studied. Nothnagel of Vienna, in 1884, attempted to make sharp distinctions between enteritis membranacea or mucous colitis, on an anatomic basis, and mucous colic, on a functional basis; the latter alone he regarded as being of nervous or neurotic origin. The term colica mucosa is the same as mucous colic, or membranous catarrh of the intestines. Potain of France, in 1887, inclined to the view that it is a superficial catarrh of the mucous membrane of the large intestine, caused and kept up by coprostasis. This seems to be the most generally accepted view among the French writers; the assumption of an arthritic or neuroarthritic diathesis among them should also be mentioned.

Vanni, of Italy, in 1888, regarded it as a myoangio-neurosis of the intestine with hypersecretion of mucus; his view is said to have modified the treatment of the affection. Edwards, of our own country, in 1888, gave a good account, adopting the name given by Da Costa; he dwells on the nervous phenomena. Von Leube of Germany, writing in 1889, regarded it as a neurosis of secretion. Rothman, in 1893, published the first report of an autopsy, in the Berliner Clinische Wochenschrift; he found much mucus in the large intestine and the tubular glands.

Since then many have written on the subject, most writers following along the beaten path; but occasionally some one would have something new. Of the many writers I can make mention of only a few, and I desire to bring out the idea that in our country the affection is not simply a bowel condition, but that the nervous features are of the highest importance.

In 1900 Mannaberg (Wiener Med. Wochenschr, Oct., 1900,) reviewed the literature and the opinions concerning pathogenesis and pathologic anatomy. He came to the conclusion that there is a diversity of opinion in regard to the frequency of the disease; there is a lack of a generally accepted pathology; there is insufficient consideration of the clinical picture. He brought out the fact that there are three sets of views held by investigators: (1)

That it is an organic disease of the intestine, principally of the large bowel. (2) That it is a secretory and motor neurosis of the intestines. (3) There are two entirely different conditions—(a) an inflammatory disease of the intestinal mucous membrane with the production of an extraordinary amount of mucus; (b) a purely nervous disease without any organic disease in the bowel. A few writers believe there may be a combination of the above types.

Mannaberg concludes from his comparative studies that there are two different pathologic entities that have been confused under the name and he agrees with Nothnagel in differentiating colica mucosa from enteritis membranacea. The latter is a form of enteritis marked by profuse mucoid and membranous stools and caused by chronic diarrhea, tropical dysentery, typhoid fever, hemorrhoids, intestinal tumors, irritating enemas (especially of silver nitrate, vinegar, alum, tannin and glycerin), anthelmintics and drastics. The former (colica mucosa) he regards as a disease sui generis; it is not connected with any of the above causes, but is apt to occur in nervous cultured people who are usually constipated and suffer from some lesion of the genitalia, enteroptosis, and achylia gastrica. The cause may be sought for in vain, although constipation and enteroptosis have been thought to be of casual influence. Mannaberg thinks there may be an indirect connection between constipation and colica mucosa, brought about by the fact that mucus is amassed in an empty, contracted, and for a considerable time inactive part of the large bowel, to be expelled later on by more or less colicky contractions. He believes a larger number of pathologic examinations are necessary to determine and differentiate; a correct diagnosis is of scientific interest, and treatment depends upon it.

On going over the recent literature within my reach and comparing the writings of German, French, English and American observers, I came to the conclusion that the former emphasize the importance of the bowel condition and minimize the nervous manifestations; the French attach special importance to the arthritic or rheumatic and neuroarthritic diathesis; the English more nearly approach in their views those of our own writers, who attach

much importance to the nervous features. Let us examine into this matter a little more closely.

Recent German writers, as a rule, follow Nothnagel in his views and lay most stress on the bowel condition, and to cure the constipation with them is almost equivalent to curing the mucous affection. It seems strange to us that they should pay so little attion to the nervous features and that these are referred to chiefly as being hysterical, as though that term was an explanation of them. Von Leube, in his Special Medical Diagnosis (1904) gives little space to the affection and attempts to distinguish between "Membranous Enteritis" and "Nervous Enteropathy with Formation of Membranes."

Von Noorden may be regarded as a representative German writer and a brief review of his little work on Membranous Catarrh of the Intestines (Colica Mucosa) may be of interest. He refers to the fact that in spite of numerous dissertations in the last few years, the affection has not yet attained an established and generally recognized nosological position. He dwells, German fashion, on the two forms of the affection—one on an anatomic basis or as an inflammatory phenomenon, the other as a functional disturbance without any anatomic lesion, that is, colica mucosa.

In his experience membranous catarrh of the intestines is more common in women, and the majority of cases occur from the age of 20 to 45; the disease does not seem to be equally prevalent in all localities—among his cases a relatively large number were Russians. The great majority of his cases gave a history of long continued stomach disturbance and just previous to the attack of colica mucosa he finds that "almost without exception the patients suffered for some weeks or months from obstinate constipation." This statement is given in italics. He makes a mere reference to the nervous history of his cases. He says: "Among individual symptoms I must discuss the two cardinal signs of the disease, viz., evacuation of mucus and the attacks of pain," this again in italics. He refers to the mucus as occurring in a variety of forms, from loose and glairy up to rather hard and membranous. "The

only remarkable difference between the mucus of colica mucosa and other intestinal mucus is the fact that the former contains fewer cellular elements than the mucus in catarrh of the intestine."

"As we understand and explain the matter the mechanism of an attack of colica mucosa is therefore quite easily interpreted. The disease, if we are right, can only appear in its typical form, i. e., in the form of periodic passages of mucus with or without pain, if there is a certain degree of sluggishness of the bowels." From this it can readily be seen why with Von Noorden "colica mucosa may be successfully treated by removing and curing constipation." The infrequency of cases may be inferred from the following passage: "But we have occasion to treat some 30 or 40 cases of chronic constipation with a great variety of nervous, hysterical and neurasthenic symptoms before we encounter a case of colica mucosa, even though the peculiar character of our professional work and the class of cases we are apt to encounter would naturally bring a larger number of difficult cases of colica mucosa to our attention than to the attention of the general practitioner. In full agreement with Nothnagel, Von Leube, and others, we arrive at the conclusion, therefore, that in addition to general hysteria or neurasthenia certain morbid changes in the secretion of mucus in the intestines play an important and determining role in the genesis of the disease. Neither constipation alone nor neurasthenia alone nor the common combination of these states can produce colica mucosa unless at the same time there is some involvement of the nervous apparatus that governs secretion of mucus in the large intestine. This characteristic involvement of the nervous apparatus can best, according to Nothnagel, be called a secretory neurosis."

One-half of Von Noorden's treatise is devoted to treatment, and with him diet is all important. He refers only briefly to the influence of surroundings, and to leaving home, not so much on account of any benefit to be derived from the change as for the greater control over the patient and having him or her live up to the prescribed diet, which, in his opinion, can be carried out bet-

ter in an institution than at home. He barely refers to an out-of-door life in the country. With him "the cure of colica mucosa presupposes a cure of the constipation. Any method of treatment that causes a complete and permanent disappearance of constipation will also cause disappearance of colica mucosa."

In his table of cases he makes remarkable claims for success, entirely at variance with those of our own writers, and I feel confident that if he were to base his conclusions on cases as we see them in the United States he would soon change his opinion, especially in regard to the permanent curability of the affection.

Of the recent French writers, de Langenhagen has published papers on the affection since 1898, and an English edition (1903) of his book on Muco-Membranous Enterocolitis, the usual French name, opens as follows:

"Amongst the divers manifestations of the arthritic diathesis that I have observed since I have practiced at a place where these manifestations seem to converge, one of the most important of the many questions it raises, and the most interesting, appears to me to be the affection designated under the name of enteritis, or mucomembranous enterocolitis. Whether it be really on the increase, or that it is better known than formerly, this malady is now very frequently met with; so much so, indeed, that Dr. Charrin, speaking at the twenty-third conference of the Association for the Advancement of Science, in 1894, said: '* * * * Its frequency, from what I have observed, greatly exceeds that spoken of by medical authors, even by those who declare they conisder it as not uncommon. This extraordinary frequency, the importance the malady may assume, etc., show, in my opinion, that it should occupy a much larger place, even in ordinary medical manuals, than that usually assigned to it.' I am, in this respect, of the same opinion as the eminent physician, and this induces me, in my turn, to publish my personal remarks on this affection." His experience is based on 1,200 cases. He says:

"Muco-membranous enteritis is characterized by three principal symptoms: a glairous secretion more or less concreted into pseudomembranes; the irregularity of the intestinal functions;

and abdominal pains of a special character." But, he adds, there are a number of other important symptoms. His definition a little later on is: "Muco-membranous enterocolitis is an enteritis typified by constipation." This is in italics.

Next he refers to enteroptosis as being a syndrome of the affection, but as he does not look upon it as a cause, we must look elsewhere for the etiology—what this is, is indicated in the opening quotation above, i. e., the arthritic diathesis. Attendant disturbances of the internal organs and of the nervous system he classes under the head of complications, and he attaches much importance to intestinal lithiais—as may be expected from his assumption of an arthritic diathesis.

Of the nervous features he says: "Undoubtedly all muco-membranous enteric patients are neurotics. Neurasthenia is not the only neurosis obesrevd; I have several times met with hysteria, and two or three times with unmistakable hypochondria." On the controversial question, "Which precedes?" he is inclined to the view that the nervous disturbance is secondary; in cases where it is primary it is considerably aggravated by the affection of the bowels.

Under the head of clinical forms he speaks of the different grades, from mild cases that scarcely come before the physician, up to the very severe with a large train of attendant disturbances that reduce the patient's health. Under etiology he expresses his belief that the proportion of cases in men is larger (28 per cent. or more) than was heretofore believed. He then develops his views on the causation more in detail: "I am constantly finding the following remarks in my notes: 'Marked arthritism, gravel,' hemorrhoids, migraine, hepatic lithiais, gout, rheumatism. Obesity in the family; impressionability; very great nervousness; several neurotics in the family." * * * This seems to show that it is the association of these two "manieres d' etre" of the system, arthritism and the neurotic temperament; or, in other terms, "neuroarthritism, which creates this predisposition to that intestinal atony which is itself the bounden cause of muco-membranous colitis. I go even further than this. I consider enterocolitis

as a very frequent attribute, a stigmata, so to say, of the neuro-arthritic diathesis; so much so, that when a clinical research is made as to whether or not a subject is arthritic, inquiry should always be made concerning gout, gravel," etc.

He believes that "the trite etiologies which the old authors repeat one after another, should be abandoned, and that, instead of traumatism, chill, puerperality, etc., as causes of the complaint, its true character should be given as a diathesis, a constitutional malady."

"This idea of connection between muco-membranous enteritis and neuroarthritism explains why the former is so much more frequent than it used to be, as well as its daily augmentation. It is certain that neuroarthritism finds in the present conditions of modern life all the elements necessary for its development. The numerous complications of the present mode of existence, introduced by recent inventions, the feverish, overheated mental atmosphere of our great cities, late hours, overwork, errors in food, etc., all combine to cause this complaint. The proof of the exactness of this theory is that, even at the present time, it is extremely rare to find muco-membranous enterocolitis amongst country people; it is a disease of people living in towns and cities, where the mental outlay is not balanced by a healthy outdoor life."

De Langenhagen thus approaches in many respects the views of our own writers on the symptomatology and etiology; his assumption of an arthritic diathesis is, of course, extreme. If he had examined more closely into the matter he might have found another important factor that distinguishes life in a large city from that of the country.

In the matter of treatment he is not so hopeful as the Germans. He says: "The affection is by no means beyond the resources of the healing art; it can always be considerably relieved, and sometimes completely cured, by therapeutical means, chosen with discernment and employed with perseverance. Here the question of diet is of supreme importance." He dwells on the importance of diet and keeping the bowels open, and on the kinds of laxatives to use; he also refers to the German custom of giving large ene-

mas of salad oil. Attendant painful or disagreeable symptoms of course demand attention. The hydromineral treatment he considers highly important—as may perhaps be expected from one in his position as consulting physician in Plombieres. He makes a mere mention of the value of sensible hygienic habits, regularity of meals, outdoor exercise, the ventilation of living and bedrooms and a healthy action of the skin.

Of English writers it may be said that they do not greatly differ from our own, except that they do not attach so much importance to the nervous manifestations.

Among recent English writers may be mentioned T. S. Wilson, in the British Medical Journal, who divides colon catarrh into four varieties: 1. Simple catarrhal colitis, with marked cardiac depression. 2. Subacute and simple membranous colitis—continued small amounts of mucus in constipation, alternating rigid dilatation of the colon, pain for an hour or two after meals or at night. 3. Mucous colic. 4. True catarrhal typhlitis. Wilson insists that the key to treatment is in recognizing the relation to gout and the uric acid diathesis. In acute cases he uses salicylates, in the more chronic cases salol, and he advocates the use of a diet with little residue. Just the opposite of Von Noorden with his coarse diet. The reference to uric acid diathesis and gout recalls the French arthritism and neuroarthritism.

Coming now to the writers of our own country, it may be said they emphasize, and rightly, in my opinion, in accordance with local conditions, the importance of the nervous features. Mendelson, for instance, in 1897, laid special stress on the nervous character of the affection, that it is a functional disturbance and that it is much more common in so-called neurasthenia than was heretofore supposed.

Now I do not wish to single out certain writers to the exclusion of others, but I would like to quote from Butler's Diagnostics of Internal Medicine (1902) to show the variety and importance of the nervous symptoms. After giving a description of the general symptoms, the onset and paroxysms of pain and the passage of the mucus, he says (page 799):

"The nervous phenomena are peculiar and striking in the extreme. Some of these are practically of invariable occurrence in this disease. Among them are hysteria and hysterical stigmata of all kinds; hysterical coma, convulsions, and aphasia; neurasthenia, vertigo, attacks of blue nails and lips, tingling and numbness of hands and feet, acute neuralgias of all parts of the body, pain in the external ear, tender scalp, tinnitus aurium, hyperesthesia, paresthesia, anesthesia, temporary defects of vision, morbid alterations of taste, irregular muscular tremors, paresis, paralysis, chorea, catalepsy, amnesic aphasia, mental depression, poor memory, hypochondriasis, and melancholia. Many if not all of these are transient and, in the absence of definitely ascertained lesions, largely functional in character. Finally, to these may be added the peculiar paroxysmal pain and tenderness."

Quoting from Edwards, he adds: "When occurring in children it is found, after eliminating simple intestinal catarrh, that the subjects are from parents whose nervous systems are diseased, or who have suffered from convulsions, hysteria, neuralgia, rheumatism, or insanity. The children themselves have shown convulsions, passionateness, morbid timidity, chorea, or rheumatism."

Under diagnosis he says: "I am persuaded that the existence of this disease is not infrequently overlooked. DaCosta's rule is good and practical to suspect this disease "in every case of anomalous nervous symptoms, particularly hysterical, in which there is abdominal pain.' "

Under prognosis he says: "The outlook for permanent recovery is not good. Nevertheless, the prognosis, with appropriate and judicious treatment, is not so gloomy as it is usually stated to be."

Finally I would like to call attention to the opening paragraph of Adler's excellent article in the Reference Handbook of the Medical Sciences, Vol. III, page 198. He says: "A distinction is frequently made between mucous and membranous colitis; it will appear further on that this distinction can not well be maintained, and it is proposed to treat the subject under the common heading of mucous colitis."

I now desire to make a few remarks based on my personal experience with cases of membranous catarrh of the intestines and end with a query.

In the first place, I believe this ailment, so far I have not called it a disease, is common in this country, and I believe that the descriptions by our own writers express the symptoms and condition of our patients better than do the descriptions of foreign writers; the latter of course base their descriptions on cases living under surroundings different from those of our own. To give a true picture, it seems to me, the description must be a composite, either based on cases from all nationalities or on cases from one country to the exclusion of other countries with different surroundings, or modifying factors. Local descriptions can be used for making comparisons. In our own country we have to take account of the nervous features above all others, and we can scarcely understand why the Germans dwell on this phase so lightly and why with them to treat membranous catarrh of the intestines means to treat the constipation.

I am inclined to believe that we may safely disregard foreign opinions or descriptions on clinical manifestations of the affections, because they do not do justice to the conditions as we find them here. We can do this all the more readily because very little is known about the pathology; there is an excessive formation of mucous in the bowel, is practically all that we know about it, or at least that is all a practicing physician need know in the present state of our pathological knowledge.

It is said that our triad of national "diseases" is: catarrh, dyspepsia, and nervous prostration. These affections as commonly understood certainly dominate membranous catarrh of the intestines to a great extent. Can it be that these affections are themselves simply a manifestation of a something else?

A discharge of mucus from the bowels is of frequent occurrence among certain of my patients and among quite a number. The majority of my cases of this kind are women, but it is not uncommon among children. My youngest case, a girl of four years, has a history of mucous discharges and a typical history

of membranous catarrh of the intestines going back to within a year of birth; my oldest patient is a woman aged about 65. All of the cases exhibit certain nervous manifestations, many of the patients would ordinarily be called neurasthenics, but practically speaking none are hysterical. At times the history of the mother is repeated in the child, that is in the female child.

At times I found that the ailment existed unknown to the patient, because the stools had never been examined. Then again I have met cases whose history led me to suspect the presence of mucus, but on inquiry whether anything unusual had been noticed about the bowel discharges a negative reply was received; but on asking if slimy matter was present at any time I have on several occasions been told that there was much of it, but that this was supposed to be normal and nothing was thought of it. Young females especially hesitate to speak about the matter and often much questioning is necessary to find out actual conditions; this remark of course applies mainly to mild cases. Reference might also be made to the mucous discharge in so-called sigmoiditis, which I am told is not uncommon; the pain is low down in the pelvis and more localized and the nervous symptoms are absent or less marked than in membranous catarrh of the intestines.

Cases of membranous catarrh of the intestines with a constant discharge of mucus are certainly not common, and personally I have never seen one, but cases with more or less frequent discharges during the winter months I have met with now and then; the discharge stops or recurs only at long intervals during the warm months of the year. In the great majority of cases the attacks of colicky pains and the discharge of mucus and membranes occur at irregular intervals; days, weeks, or months may intervene.

Preceding an attack, in nearly every case, there is more or less malaise, some headache, vague pains throughout the body, with anorexia and even nausea; later on there may be vomiting. The bowels, which may have been regular, now show a tendency to become constipated and when, on account of the nausea, no food is taken the bowels soon cease to act at all in a normal manner.

In a day or two, often even on the same day, or after three or four days after the initial malaise, pain in the bowels begins, it may be throughout the course of the colon or somewhat localized here and there, as at the sigmoid flexure or at the cecum or in the "pit of the stomach," to use a frequent expression. The pain may soon become intense and of a colicky and sickening character and may be expressed in the drawn features of the patient. In case of localization the pain radiates and may be of a sharp stabbing character. Usually but not invariably the abdomen is somewhat distended, but in those patients where it does occur it is apt to return with, or in, each attack. The temperature is usually slightly subnormal, although the face may be flushed. Most patients, in common with the physician, realize the importance of keeping the bowels open—and in proportion as this is done or occurs the attacks are less severe, and, moreover, most of them know from experience that the sooner the bowels move and the mucus is discharged the earlier there will be relief from the pain and distress. The pain may be so severe that anodynes are required. The bowel discharge after a new attack has set in may vary considerably; there may be more or less fecal matter with considerable mucus in an amorphous form; if no food had been taken for some time, on account of the nausea, and the mucus had time to accumulate and harden, shall we say by desiccation, then the discharge may consist wholly of mucus and in the form of a perfect cast of the bowel. In this case the attendant pain is most severe. There may be only one discharge during an individual attack, but as a rule there are several; there may be repeated discharges and lasting from a day to several days and followed by diarrhea, perhaps on account of the disturbed functioning of the alimentary tract. The latter can be obviated to a great extent by watching the diet, or the food, after the first discharge of mucus has taken place. It has seemed to me that by the use of predigested foods the diarrhœa can be prevented entirely.

At times I have met with a patient who had the idea that she could diet herself and thus prevent the attacks; such a patient may be greatly emaciated and anemic on account of insufficient

nutrition. I have had patients tell me that for a long time they had been living on toast and water or weak tea—and, strange to say, some said they had been advised by physicians to do this.

On account of the nausea or vomiting during the hight of the attack, little fluid is taken and the urine soon becomes concentrated and irritates the urinary passages and this adds to the distress. Urates are of course found more abundantly in the urine at such times, but we can not infer from this that there is a uric acid diathesis—the increase is not an actual one, only relative, dependent on the lessened quantity of urine and its concentration. Parenthetically I may add that I believe the uric acid diathesis so-called, has nothing whatever to do with the average case of membranous catarrh of the intestines. Whether such a diathesis plays a part in the overfed, with erythematous or urticarial eruptions during an attack, I am unable to say.

Along with the development of an individual attack and beginning with the initial lassitude, a whole train of symptoms referable to the nervous system may develop. Cases differ widely. We may say they are neurotic manifestations, or if the disturbances are more severe we may speak of neurasthenia and in extreme cases the term hysteria may be applied. But all these terms refer to one thing, the nervous condition. In an extreme or typical nervous case we may find headache, especially frontal; vertigo, with buzzing in the ears or in one ear; flushed face with a sense of great heat, at times localized in one or both cheeks; a choking sensation in the throat; oppressed breathing; numbness of the fingers, hands and perhaps also of the feet; disturbed sensation of the skin in various parts of the body but likely to occur in the same place at each attack; acute localized or wandering pains or general diffuse pain, the pain being often regarded or described as neuralgic or rheumatic; disturbed motor functioning, tremors and pseudoparalysis. Occasionally there may be mental excitement but as a rule there is oppression, and depression may be quite marked. As in other abdominal disturbances, there may be a fear of a fatal termination, especially if the attacks occur only at long intervals. In cases where the pain is especially severe in the

region of the cecum the patient may have a mortal dread of appendicitis and of an operation for the same.

Nervous manifestations occur in all cases, but the severity and number of kinds depend on the individual and on the severity of the mucous attack. Severe attacks can to a great extent be prevented by timely attention to the bowel conditions, that is, keeping them open. The use of oil of petrol, that is, liquid petrolatum, a tablespoonful or more between meals, by mouth, may be very useful.

Although practically every case of membranous catarrh of the intestine may be classed under the term neurotic or even neurasthenic, the reverse is not true; there are many neurasthenics who do not have mucus in the bowel discharges, not taking account, of course, of varying traces to be found normally and a trifle more abundantly when constipation occurs. I may incidentally mention that the squatting posture in defecation, as found among the French, may materially assist in a proper bowel movement.

As may be expected, there are various lesions and complications that may modify the typical attacks. Some individuals have habitual deficiency of hydrochloric acid while others, and more commonly, have an excess. Enteroptosis and nephroptosis may be present but not, in my opinion, in any causative relation. Each case must of course be studied by itself.

From typical cases of membranous catarrh of the intestines there is a gradual shading off into cases with little mucus and little abdominal pain, into those with decided stomach disturbance, into cases where there is much irritation in the pharynx or in the upper air passages and respiratory tract generally, or into the rheumatic or neuralgic types, or into the neurotic or neurasthenic with little or no bowel disturbance—in other words, cases shade off variously.

Has membranous catarrh of the intestines a definite cause? Who knows? This much may be said: it is essentially and urban affection or ailment, and particularly of American cities. It becomes less and less common the more remote individuals are from a city or from civic influences. De Langenhagen mentions

that it is rare in the country. Is it really an entity, a distinct disease, or is it simply a manifestation of some other disease?

Membranous catarrh of the intestines is not common in Germany and is of a milder type and more amenable to treatment. Is this due to local conditions? I wonder if the Germans would have so much catarrh, dyspepsia, neurasthenia, and membranous catarrh of the intestines as we have if they would adopt our habit of chewing tobacco and spitting all over the floor and sidewalks, and thereby encourage the catarrh afflicted individuals to spit equally promiscuously and thereby compel us to inhale a polluted atmosphere.

Most of the treatises, and particularly those of our own country, speak of the benefit to be derived from a change of air, a change of climate, a stay in the country or in the woods or at the lake or mountain. No reasons are given, it is stated as a fact.

Perhaps the country air contains a something that cures the sick—or is it possible that the city air contains a something that makes people sick, and do the sick get well simply by leaving the city?

SUMMARY.

There is an affection designated as membranous catarrh of the intestines, characterized by the passage of pseudomembranes and shading off into amorphous mucus. The passage from the bowels is accompanied by a peculiar pain and by certain nervous manifestations. The nervous features are dwelt on lightly by some writers and are considered of great importance by others—national characteristics crop out. The prevailing opinion today is that it is a neurosis of secretion. Opinion in regard to treatment still differs widely, likewise on prognosis. The prognosis of German writers is the most favorable. All writers recognize the importance of pure air.

Because membranous catarrh of the intestines is essentially a city ailment, can we therefore conclude that city air stands in any causative relation to attacks?

DISCUSSION.

Dr. Fenton B. Turck, of Chicago: The essayist has reviewed the literature and has given a brief outline of the various views as to the etiology of this disease, stating emphatically that the pathology is not known, and only a very little of the etiological factors. In studying a syndrome or a symptom complex of this character in which the chief appearance of the disease seems to be associated with the colon, naturally the mind is riveted on some pathological lesion that can be seen post-mortem, some picture that can be definitely drawn and recollected, something which we can establish as an anatomical entity. If we carefully analyze the literature, you will notice various differences of opinion are frequently simply differently expressed manifestations of the same condition. Sometimes we find fine sand discharged, which the essayist failed to mention. The English especially emphasize this, and it is recently said in France, where they use the antilithic treatment, they have been successful, and cases are sent from England to France for this purpose.

When we compare Von Noorden's observations with those of the English we will see there is simply a slight difference in the symptoms, not in the disease itself, but in the manifestations of the disease; so that there is no very great variation in the observations. But I should like to call attention to some practical points rather than go into the finer differences. For I think we will get nearer to a practical understanding by determining some of the factors that we all more or less recognize and more or less treat in this practical and this very complex condition. When we use the words "neurosis" and "neurasthenia" we are using the same expression the English use in calling everything "gouty." It is simply an expression we use frequently in a general way. For we do not find a great lesion; we find some nervous manifestations, it is true, and I have no doubt of the assumption that there is always a substratum of nervous lack of co-ordination of the alimentary tract. Let me give an illustration. We find that there are often spasmodic contractions of the intestines, so that above the point of spasm we find dilation, and below that an almost col-

lapsed condition of the bowel, showing a lack of the proper co-ordination of the motions and that there is not a rythmical peristaltic wave—waves that pass in proper order—so that wherever there is contraction there must be relaxation in front. Where this occurs colic results and this colic produces more or less pain. So from a close study of the physiology we can see that there is some disturbance of the nervous mechanism controlling the peristalsis, and therefore with the other general symptoms we rightfully assume a nervous substratum.

But when we are confronted practically with this condition we must meet, if possible, the physiological-pathological changes found. In place of hunting for some cellular pathological change let us consider what are the physiological-pathological changes. First of all, there is generally in every case I have seen atony of the stomach and intestines. Whether there is diarrhœa or constipation, there is always atony present in the stomach and intestines, especially of the colon, and generally in these cases the colon will be found very easily distensible, so that a small amount of air will distend it readily. You will find that a small amount of air in these conditions enormously dilates the colon, much more than in a normal condition. The second point I want to call attention to, very important in the treatment, is the splanchnic congestion. They have cold hands and feet, more or less, and the blood is not circulating properly in the periphery. It is more or less congested in the abdominal vessels, and in proportion to this degree of congestion many of the symptoms are found to be exaggerated.

Now if you will accept with me that there is first the incoordination of the motions of the peristaltic wave, this associated atony, and with it the splanchnic congestion, you can readily understand the periodicity of these attacks. For when there is more or less accumulation and the walls of the intestine do not properly excrete, the mucus accumulates within the bowel, and thus we may have one cause of the spasm of the lower part of the bowel. There is retention with atony and we have constipation, or at another time there is over-activity and we have diarrhœa,

alternating in this way, representing in either case fatigue, exhaustion of the bowel.

Now briefly, how would we treat these conditions? First, remove the splanchnic congestion. This must be accomplished through the nervous mechanism only. What methods have we at our command for doing this? If you will place a cold cloth over the entire abdominal area and hot bottles to the feet and hands, by stimulation of the splanchnic vessels through the cold cloth we contract them and dilate the peripheral vessels, and thus we very rapidly reduce these terrible pains. At the same time we have a reduction of the spasm that occurs in the bowel. Now there are a great many methods of doing the same thing. I have given you only the principal points to meet the physiological-pathological condition. Second, if we have atony of the colon and attempt to treat the bowel by large injections of water the water will become an irritant and the exhausted bowel can not contract. You only have more fatigue than before, and it often increases the disturbance. It is not an attempt to force out something, but to stimulate normal peristalsis. I would use occasionally for cleansing purposes slippery elm water and bicarbonate of soda. What I find best are small injections at 120° Fahrenheit, which stimulates and contracts the vessels and at the same time removes a certain amount of material from the bowel, but principally for its effect upon the walls of the bowel. Second, introducing air into the bowel and massaging it out again, thereby exciting peristalsis. This gymnastic exercise kept up daily has a beneficial effect on the peristalsis of the colon and at the same time has a very excellent effect on the circulation.

As to diet I want to briefly state one or two little points. We will find that meat in these cases produces more or less disturbance, and it is not due to the albumen of the meat, nor to the fat, nor to the water, nor to the salts, but to the extractives. They are toxic in character and when taken into the circulation and again excreted they become irritants. Therefore we should remove the extractives, and this is accomplished by pressing the meat, which takes out 40 per cent. of the water, leaving 31 per

cent. behind. We increase thus the proportion of albumen. Then put it in an autoclave under 15 pounds' pressure, which removes the gelatin and the extractives, and we have a substance that is very digestible and becomes a very wholesome food in this class of cases. We can give large quantities without harm. It can be flavored with Wahl's Extract made from yeast, with curry or other flavor. I believe this meat is one of the important nutritious foods which is needed in the treatment of these cases. I do not call these cases hopeless at all if we will carry out the treatment on physiological lines. Fresh air and walks and sunlight are good, but we must apply our art too. We can not simply send them to the country or to the springs, we must use our art, and we can by applying these methods to the treatment of the disease accomplish quite as much as by the method extolled by the surgeons of performing a right-sided colostomy. What I have outlined is along physiological-pathological lines that seem to meet the physiological-pathological conditions present.

Dr. Geo. D. Kahlo, of Indianapolis: There seems to be so much speculation among the recognized authorities of the different countries as to the etiology and pathogenesis of this condition that perhaps we may speculate a little here. It is hardly to be expected that we will settle the question now. One possible factor in dealing with the etiology is the question of the secretory and motor functions of the stomach, which we may say are disturbed. You may have a neurotic condition. But whether this is primary or secondary can not be stated definitely. In any event an analysis of the stomach contents in a considerable number of these cases has demonstrated that we have primarily, at least, a hyperesthesia, a hypersecretion. Now if we have to deal with a hyperchlorhydria associated with pyloric spasm we can readily understand how food confined in the stomach for an abnormal period will undergo fermentation, causing distension, and it may be when it is carried along the intestinal tract is so acid that the intestinal secretions of the pancreas and the bile are insufficient to neutralize it. Intestinal digestion can only go on in an alkaline medium. Therefore we have irritation by contact alone. Now

this contact kept up for a considerable period, it is not difficult to understand, might produce an irritation upon the intestinal tract as well, and if you will examine the feces early in the history of this condition, which unfortunately is done too little—even a gross examination—you will find the presence of mucus in a great many more cases than would be suspected, and in the beginning, at any rate, you would have to deal with an acid fecal mass. Later on it may become neutral.

Now the essayist has spoken of the influence of diet, and while he did not go into detail he speaks of the possibility of employing predigested food, but saying that the objection to this is that the patient is not properly nourished. I believe it is a very decided objection. I do not believe we are justified in resorting to a diet of this kind where the question of nutrition is so important. I think we can select a diet of great nutritional value without being irritant, especially before the trouble has reached a point where there is catarrhal inflammation. Some of the cases are, I believe, organic in the later stage, but functional in their developmental period. I think the meat free from extractives as outlined by Dr. Turck a most excellent preparation. I believe the foods that should be selected are those having little residue with as much nutritional value as possible, and certainly we should eliminate such foods as fruits and uncooked vegetables that are frequently given where constipation exists.

Dr. Hessler, closing: I believe I have nothing to say in reply to what has been said in the discussion of my paper, except that when I spoke of the use of predigested foods I meant for an acute diarrheal attack following the passage of the mucus and not for the treatment of the affection itself.

I may add that had time permitted I should have presented a number of cases to show civic influences, and furthermore I did not dwell on the nervous features because I shall take them up in a special paper later on.

Presumably some expected me to say something about treatment. I would place pure air treatment first, and that means simply air free from sputum contamination, both as a cure for

present attacks and to prevent future attacks. In uncomplicated cases little medicine is required, and then chiefly during the height of the attack. For excessive pain an anodyne may be required, and for the rapid elimination of mucus a brisk cathartic, preferably a good purgative mineral water.

Nutrition should be kept up and a rational dietary adopted by the patient; an examination of the stomach may be of great service in advising about the use of suitable foods. For the anemia, often marked, some iron preparation may be of service, but we should not be misled by the advertisements of manufacturers of new iron preparation and their "clinical reports" based on cases that tend to get well on any remedy, depending on surrounding conditions.

One of the chief problems is to keep the bowels active and prevent the accumulation of mucus, and that means to prevent attacks. Physical exercise, the free use of fluids, plain food, a squatting position and a regular time for going to stool, the use of salol as an intestinal antiseptic chiefly, all help; the avoidance of the use of ice water, tobacco, and the bolting of food, should also be mentioned.

Since Fleiner's paper on the treatment of constipation by the use of large enemata of oil appeared, in 1893, this method has been largely used and is mentioned by practically every writer since then. But it is a disagreeable method and I get almost equally good results from the internal administration of the oil of petrol, or liquid petrolatum, a substance wholly foreign to the body and acting mechanically and not unpleasant to the taste.

ELECTRICAL TREATMENT OF MALIGNANT GROWTHS.

BY J. P. HETHERINGTON, M. D., OF LOGANSPORT.

Malignant growths are usually so apparently innocent in their incipiency, and often so horrible and repulsive before they claim their victim, one often feels helpless and inclined to follow the common custom of advising a patient to "wait and see if it keeps growing" and then have "something" done. How common it is to see a patient who has all the confidence in the world in his family physician, present a tiny, innocent looking, warty spot to his physician. Possibly it is near the inner canthus. The physician sees it is not a wart, not a mole—it is suspicious, but he does not like to advise his patient to submit to an operation that will disfigure or involve delicate structures, neither does he wish to turn the case over to some one else, for fear the patient may not return. So he kindly tells his patient to "wait and see if it grows." It is very slow in growth and may disappear for a time, but suddenly the patient returns. This time it has invaded the inner canthus, the patient is handled in the best way to save the physician's reputation, after a little more delay a surgeon is consulted, who advises it is too late to operate, and a little later in the scene the physician's reputation is safe, because "dead men tell no tales."

A lady comes in with a story of discovering a little lump in her breast. Careful examination detects a small, hardened mass. The finger detects no enlarged lymphatics, so she is advised to "see if it grows." Surgeons tell us that more than 50 per cent. of these cases are malignant, and they should all submit to immediate operation if they expect permanent results. Suppose an operation discloses nothing but a cyst—what a pity all could not be as fortunate!

In treating these cases the patient naturally shrinks from caus-

tics or the knife, or he is advised neither offers a ray of hope, so in this age of electricity he seeks that mysterious agent.

While electricity is used in several ways, there are practically three in common use. The violet lights, X-ray, and the old, painful and disfiguring, though excellent, galvanic current.

The large, powerful Finsen light is expensive, tedious and probably lacks penetration, so it is doubtful if it will ever come within reach of the common practitioner.

The X-ray is dangerous if improperly handled, but it is a powerful agent to combat many forms of malignant growths. Again, suppose the patient refuses to submit to the knife when we advise her. I believe the X-ray in careful hands will retard the growth of nearly all types—I might say it will assist in preparing for the operation—and as the X-ray is continued from day to day the patient will yield to his better judgment and submit to operation.

External epithelioma, not too far advanced, will nearly always yield to the X-ray without resultant scar, except where tissue has been destroyed by the growth. Extensive epithelioma in the mouth is not very encouraging. I believe carcinoma and sarcoma should be removed by the knife or galvanic current and followed by the X-ray.

Powerful galvanic current used after the method developed largely by Dr. Massey, of Philadelphia, I believe to be the present most formidable rival of the knife in intensely malignant cases where it is possible to reach them.

In this method zinc electrodes, amalgamated with mercury, pierce the growth. These electrodes are connected to the positive wire of a powerful galvanic current. As much as 1,000 to 1,200 milliamperes of current are frequently used, and as such currents are very painful, an anesthetic is necessary. The zinc and mercury are decomposed and distributed through the mass by the current. Death of the permeated mass soon occurs, sloughs, and parts not destroyed can be treated afterwards without an anesthetic. In this way the growth can be followed up and destroyed.

To save time, I will present only two cases as illustrations, though I could show several from both methods.

The one is an epithelioma so far advanced that the lower lip is about ready to slough off. The glands under the left side of the lower jaw are so swollen the skin over the upper part of the neck was even with the cheek. This picture (Fig. 1) was taken after partial recovery, and the roughened skin shows energetic X-ray treatment. I gave the patient no hope, and was surprised that he should apparently entirely recover under X-ray treatment alone, as shown in Fig. 2. Although the lower lip is still enlarged, there is no open sore, and he is practically well.

The second case is a sarcoma treated with the Massey method. The young man, who is now 24 years old, says he was playfully scuffling, when a young man slapped him between the shoulders. Two or three days later he noticed a tingling sensation, when, a few days later still, he had an attack of scarlet fever. After recovering from the fever he noticed a lump between his shoulders, and his physician said it was about the size of a hen's egg. A week later an operation was advised and performed, but the mass returned. Operation was repeated five times, when he was sent to me for X-ray treatment. The wound had refused to heal, but it closed nicely under the X-ray, though the mass returned. Again it was removed and the X-ray applied immediately through the dressings. This time it healed, but in spite of continued energetic X-ray exposures a mass slowly formed under the skin. When the X-ray was discontinued previous to operation, it immediately spread like wildfire. Up to this time no microscopical examination had been made. With the assistance of several colleagues, I performed the seventh operation myself, thoroughly enucleating everything visible from scapula to scapula and base of neck to the middle of his back, the wound exposing the spines of three vertebrae. The mass was turned over to Dr. Hessler, who pronounced it sarcoma, containing large round and spindle cells. The wound closed nicely, but between the flaps came up the familiar red mushroom (Fig. 3).

Dr. A. W. Tucker and myself then decided to try the Massey method. A fine switchboard was built to order, and again we went after it. November 21, 1904, under ether, we gave it the first round. The picture dated November 22 shows its appear-

ance and the points of puncture. A mass the size of one's fist protrudes, and to the right of this a large mass can be seen under the skin, extending upward on the shoulder. December 22, the date of the second picture in the series, the external mass sloughed. The following six pictures showed how we kept following the mass, the one of December 20, 1904, showing a mass near the clavicle about to slough, which has since healed nicely. The picture of March 20, 1905, shows how the wound is healing as we work back from the edges, and one can also see the outline of the spine of one vertebra, giving the depth of the work. The one of June 3, 1905, shows the shallow wound as I hope to exhibit it to you clinically.

I seriously doubt if such a mass can exist without putting in an appearance elsewhere, which we expect. We have not been able to detect one thus far, though it illustrates what a powerful agent we have in the galvanic current when properly applied.

DISCUSSION.

Dr. F. B. Wynn, of Indianapolis: I have been greatly interested in Dr. Hetherington's presentation of this subject. It is a very modest and very valuable one. I regret that I have no experience with the Massey method. I hope that he will make a further report upon this case in the future, in order that we may see the ultimate result. I shall speak to the question of the X-ray treatment of malignant growths.

Three years ago I read a paper on the subject before the society, and I made the statement at that time that I did not take the position that the X-ray should take the place of surgery, but that it should supplement it. And after considerable more experience in its use, I am still of that view, that it is one of the adjuncts of surgery, a valuable one, but one which will not supplement surgery.

The first point I would like to make in the discussion is what the doctor mentioned in the beginning of the paper—the indifference with which practitioners are prone to look upon initial malignant growths. We can not, as a rule, tell in the beginning whether they are malignant or not, and hence generally at the

time when there is hope for the patient, we err in dallying, in two diseases—tuberculosis and cancer, notably, which, in their incipiency, efficiently attacked, are curable. I believe it is true of cancer as of tuberculosis. Early diagnosis is in each case of pre-eminent importance. Now, we do not diagnose these cases early, and I am coming more to the view that we must determine by the microscope whether a case is cancer or not. Notably in such a case as that of Dr. Craig, in which nodules appeared in the cheek, like carcinoma in gross appearance and history, and yet examined microscopically it was not cancer, but tuberculosis. They healed readily under the X-ray, and I might have reported that as a case of cancer cured by the X-ray, but it was not; and hence the necessity of examining these incipient new growths to determine the nature of them. Then the X-ray reports will be valuable. Now, there is no disease so curable as epithelioma, taken early by the X-ray, or by surgery supplemented by the X-ray; but we procrastinate. We wait until there is dissemination of the epithelial cells into the neighboring lymphatic glands, and then it is of no use. Cases upon the cutaneous border or inside further are prone to early dissemination, and hence need early attack and efficient attack, and often you can promise cure in these cases.

Now, cancer of the deeper structures I do not feel so hopeful about. In cancer of the breast my experience has been very gloomy. In one case, the widow of a former president of this society had a tumor of the breast which was examined microscopically and pronounced cancer. A very extensive operation was made, with a recurrence in two years. Subsequently she was treated by myself with the X-ray, with the disappearance of the growth. This is the only instance in my experience where results of any significant nature were had in cancer of the breast with the X-ray. But superficial epitheliomas are perfectly amenable to treatment.

Dr. A. E. Sterne, of Indianapolis: Like Dr. Wynn, some years ago at the Evansville meeting I discussed the treatment of malignant growths with the X-rays and actinic rays, and I have

not had occasion to change my views since. I stated at that time that superficial growths, birthmarks and the growth of hair upon the face and blemishes of the skin could readily be treated by the X-rays, but that the deeper growths could not safely be reached.

Now, I very seldom commend papers on the floor of the State Society, but I must take this occasion to make an exception, and say the doctor deserves a great deal of credit for taking up the question the way he did, tersely, easily and to the point, and as Dr. Wynn expressed it, modestly. Dr. Hetherington does some of the very best work in this State, or any other, in the good little town of Logansport. He especially deserves credit for bringing up for the first time in this State the Massey method. Dr. Massey is looked upon as being somewhat of a crank among even those who deal a great deal with electricity, but he has some very clear ideas upon the subject, and he is unquestionably ahead of most of the profession. He takes the position that if you can not operate, do not put the patient into the hands of the undertaker unless you give the method a trial. I know of one case where Massey worked with a malignant growth deep in the pelvis, where the best surgeons in Philadelphia refused to operate. He had the patient come to Philadelphia, and he first made a deep incision through the skin down to the mass. And that is the proper thing. If the mass is not on the surface, open down to the mass. Then plunge your zinc-mercury electrode into the mass at several points. You can use several electrodes on one wire, and then use the indifferent pole elsewhere. Dr. Bond asked how much shock there is. In the first place you do not want to turn the current on quickly. You will burn him up. You can use 1,200 milliamperes safely. A man can use 80 volts safely, and I have done so myself. With the proper apparatus I do not think there is a bit of danger. I have had some experience with this method, but the cases were not of sufficient importance to report them. Massey has kept such minor instances in the background. He took this mass out of the pelvis, going in through the sacrum. The first slough was as large as the fist. He kept on through the fistulous opening for three or four weeks, and as near as can be told the woman is well. He doesn't say it will not return. It is

a valuable method, and should receive the sanction the doctor has given it on the floor of the house.

Dr. C. S. Bond, of Richmond: While a partner of Dr. Weist I went over the surgical features of carcinoma of the breast especially. He was a prominent surgeon, and I had ample opportunity to see the results of surgery in these cases. At first we took out the carcinomtaous tisue. Then we cut deeper, and finally ripped out the glands of the armpit, and the tissues became bound down with a hard ciccatrix. It was a painful procedure, and absorption was impossible over that area. And after all the operations that we performed through all those years there was but one case permanently cured. Therefore, I think the early diagnosis of carcinoma of the breast is superfluous, because if you do operate, and do these other things outside of the X-ray, or operate under the skin, I can not see how you are better off. Because unless you absolutely kill the cause of the disease you have done no good; and we do not know any more of the cause of this disease than we did twenty-five years ago. But things simply in the skin, acne, for instance, and lupus, these cases do get well. It evidently does kill the bacillus of tuberculosis in the skin, and if it kills them there it would seem reasonable that it would kill other bacilli. I think we have to say that it is a powerful escharotic. Many times we fail to get results because we do not apply the current long enough. If you apply 10 amperes with 10 volts five or six inches from the tube for fifteen or twenty minutes, after five or ten applications you get exfoliation of the skin. If applied longer, you get desiccation of the epithelial layer; and it is only a question of the amount until you get the escharotic effect deeper in the cells. I can not see much difference between its use that way or by the needles. You have to apply it for a longer time.

Dr. Sterne: You do not get death of tissue between the disease and the tube.

Dr. Bond: If you apply it over the same place long enough you can get it.

Dr. Hetherington: Do you mean with the X-ray?

Dr. Bond: Yes.

Dr. Hetherington: If you apply it long enough to get death of tissue, the patient will go with it.

Dr. Bond: Well, you get bad burns sometimes. People are different as to their susceptibility. So that it is a question of the escharotic effect. We do not know enough about it yet. As soon as we do, so that we can apply it properly, we can get as much disturbance of the skin as we want. You can kill the cells to a certain depth, and can kill the bacillus with them. That is the idea I wanted to advance.

Dr. Hetherington: Dr. Massey thinks the galvanic current possibly has a selective effect upon cancerous tissue on account of it being more thoroughly supplied with blood, the blood being a better conductor than the tissue elsewhere around it. For instance, using a current through a certain amount of tissue, if a part of that tissue has a more active blood supply than the tissue around it, or even a little way around it, the current will follow this easy path. The path affected by the growth is the path it will take. The positive pole, being the acid pole, decomposes the zinc and mercury, and the current traveling toward the negative pole carries these minerals along, so that we have a new method of applying the old-time cancer plaster. That is the idea.

The difficulty in treating a good many of these growths with the X-ray is that it is so uncertain. I have forgotten who, but one gentleman from Chicago told about an X-ray burn that developed 16 months after the exposures. The patient had an affection of the larynx, possibly carcinoma, and had apparently recovered. Sixteen months afterward there was a sloughing, and it had to be grafted from the abdomen. What the outcome of this treatment will be is difficult to say at the present time, but I think we should be trying to do something, and not allow the quacks to get hold of these cases. This young man I do not believe will recover. He is much stronger than he was when I began. It was such an enormous spindle and round-celled sarcoma I think it will be one of those cases that just before he gets well he will die. I have quit using the X-ray.

THE ACCESSORY SINUSES OF THE SKULL, WITH A BRIEF REFERENCE TO DISEASES OF THE SAME.

BY JOHN JOHNSON KYLE, M. D., INDIANAPOLIS, IND.

Introduction.—During the past few years, there has been observed a rapid advance in the elucidation of diseases of the accessory sinuses of the head, due to a more detailed study of the anatomy of the parts.

This paper will be so subdivided as to include briefly, the embryology, physiology, anatomy and diseases of the accessory sinuses. Under diseases we will consider those having their origin within the sinuses and those resulting from extension from contagious parts. We will make little or no mention of acute catarrhal conditions, rather devoting our entire time to acute and chronic suppurative affections of the sinuses.

Embryology: From the mesoderm, one of the three germinal layers of the body, is developed the bony framework of the body. The skull at birth is composed of bone, membraneous bone and cartilage molded into form characteristic of that of man. The cartilaginous portion is formed only at the base and sides of the cranium, about the region of the ear, while the roof and face are made up of membraneous bone, which changes into true bone.

Chondrification first begins in the occipital and sphenoidal region, and ossification, in consequence, is here first observed. Complete fusion of the embryonic portion of the sphenoid bone does not take place until after birth. The ethmoidal cartilage begins its formation later than the sphenoid, while ossification begins at birth. At birth, according to McMurrich, the ethmoid bones are thick masses of "spongy bone showing no indication of future cell development."

The frontal cells are formed after birth, reaching their full development about the eighth year of life. The antrum of High-

more, situated in the superior maxillæ, begins its development the sixth month of fetal life and is contemporaneous with the growth and development of the alvoelar process. At birth it is simply a small slit on the outer wall of the nasal cavity and, according to Turner, it has a measurement of 3 mm. vertical, 2 mm. transverse and 7 mm. anteroposterior. As previously remarked, at one time solid spongy tissue completely filled the sphenoid, ethmoid and maxillary masses. After birth and for a specific reason, by a process of evagination of the mucous membrane of the nasal cavity, absorption of the bone is produced and respective cavities formed. The mucous membrane of the nose is made up of two kinds of epithelium, a simple pseudostratified ciliated epithelium and a stratified columnar epithelium. In the respiratory region of the nose or that portion of the nasal cavity below the superior turbinated bone, epithelium of a pseudostratified variety abounds; it is this form of epithelium which evaginates itself into the accessory sinuses and, in consequence of this, we have the primary cause of extension of disease from the nose, i. e., continuity of tissue.

Physiology.—The function of the accessory sinuses is to lighten the weight of the skull, to lend a certain amount of resonance and timbre to the voice, to increase the size of the skull antero-posteriorally, and thus lessen strain on the muscles of the neck and on account of the character of the epithelium with goblet cells, a secretion is furnished to the mucosa of the nasal cavity, which has its influence on moistening inhaled air and possibly stimulating the olfactory and general sensory sensibility. The lymphatic supply of the accessory sinuses is still a matter of conjecture. According to Most, Poirer and Charpy, all the sinuses send their lymphatics into the retropharyngeal glands.

Pathology.—Among the many organisms which under favorable circumstances are present within the nasal cavitv are the streptococci, staphylococci, the bacillus of Friedlander, colon bacillus, probably the bacillus of whooping-cough, tubercle bacilli, bacillus of syphilis and the Klebs-Loeffler bacillus. Many observers, according to Turner, make two divisions of bacteria involving the sinuses: the aerobic, or those which multiply in the presence

of air and are as enumerated above, and the anaerobic, or those which live without air.

With the proximal presence of such pyogenic organisms, under favorable circumstances, it is very easy to understand why we so frequently have inflammation independent or accompanying local or systemic inflammation. Organisms may reach the accessory sinuses through the blood or lymph streams as well as by continuity of tissue. The diseases which most frequently extend to the sinus are cold in the head, scarlet fever, measles, diphtheria, whooping-cough, pneumonia, influenza, syphilis and typhoid fever. I do not believe that I am exaggerating when I make the statement that one-fourth of all the people suffer more or less from sinusoidal disease. The severity of the disease and its longevity is dependent more especially upon the patency of the orifices connecting the sinuses with the nasal cavity.

The effect of a discharge from an acute or chronic inflammation of the sinus, draining into the nasal cavity and its influence upon the intestinal tract and blood and lymph stream, predisposing the patient to other diseases, is of more than passing interest to the general practitioner. The rapidity of recovery is, as a rule, governed by the character of the infection, that is, monobacterial or polybacterial. Monobacterial infection is more rapid in recovery than polybacterial or mixed infection.

Accessory sinusoidal inflammation can not alone be classed as a local disease, for with the elimination of toxins and their influence upon nutrition with enlargement of the spleen, kidney, liver, intestinal and lymphatic disturbances, the disease passes into the field of general infection and should be treated as such.

According to Hajek and Killian, the mucous membrane of the maxillary antrum has a greater resisting power to infection than that of the other sinuses, and, in consequence, infection in this region is not so frequent as in the frontal or ethmoidal cells.

Prognosis.—Inflammation of the sinuses in their acute catarrhal or acute suppurative stage may terminate in a spontaneous recovery or become chronic. A chronic catarrhal condition may gradually wear out or end in suppuration. A chronic suppura-

tion unattended by surgical interference, is, as a rule, only cut short by the death of the individual. As far as life is concerned, disease of the accessory sinus seldom terminates fatally. Meningitis and abscess of the brain may follow infection, producing death. In favorable cases, acute conditions usually end in two to four weeks, while chronic cases terminate without any rule of time.

Diagnosis of Purulent Inflammation of the Maxillary Antrum.—Diagnosis of acute purulent inflammation of the maxillary antrum is usually accompanied by pain over the forehead and acute coryza. In addition to the nasal symptoms, there is sometimes present a slight rise of temperature preceded by a chill; pain and tenderness are elicited upon pressure upon the proximal alveolar process. Pain is usually aggravated at night and is sometimes relieved by sitting upright in bed.

Upon examination rhinoscopically, a purulent secretion may be observed extending into the middle meatus. Copious discharge from the affected side of the nose may sometimes occur after arising. If the patient stands with the body bent forward, hands pointing to the toes, for a few minutes, pus may pour out into the nasal cavity. Transillumination usually shows darkened area over the antrum. The infraorbital "light crescent" will be absent or much less than on the normal side.

Chronic empyemia of the maxillary antrum is more often diagnosed by a constant dull, aching pain in the side of the face, thick purulent discharge from the nose about the ostium maxillae of the affected side and darkened area upon transillumination. Diseased teeth on the affected side may suggest antrum complication. The absolute presence of pus can be diagnosed by puncturing and irrigating with Krause's trocar.

Diagnosis of Acute Purulent Inflammation of the Frontal Cells.—Acute inflammation of the frontal cells more often extends from a like irritation in the nasal cavity round about the nasofrontal duct, due primarily to some interference in drainage, due to the swollen anterior middle turbinated body and extension of pathogenic infection from the nose.

The symptoms are briefly, headache, malaise, pain of an intense character over the eyebrows and forehead with slight swelling, slight photophobia and lachrymation, with stuffiness often in the nasal respiration. One peculiarity of pain in inflammation of the frontal sinuses is its onset at sunrise, diminishing early in the afternoon. The reason for this periodical pain is the accumulation of pus which compresses the air in the cells. Relief only follows after the discharge of pus and mucous into the nasal cavity. Pain upon pressure along the supraorbital ridge and inner orbital angle is very marked. Pain and fulness in the frontal region may be produced by stooping or bending the head forward and downward.

Diagnosis of Chronic Empyemia of the frontal cells is usually established by transillumination, tenderness upon pressure, constant pain, discharge of pus into the middle meatus, symptoms of cold in the head. Hyperemia of the vocal cords with slight bronchial irritation may accompany the disease, produced by the extension of disease from the continuity of tissue and toxins eliminated from the pus secreted from the sinuses. On account of the difference of the epithelium of the nose into the larynx or vice versa. In diagnosing the origin of pus, care must be taken not to confuse pus from the sinus with that coming from the maxillary antrum.

Diagnosis of Acute and Chronic Purulent Inflammation of the Ethmoid Cells.—Acute inflammation of the ethmoid cells is rarely observed, the disease being confounded with acute coryza. The conspicuous symptoms of acute inflammation are headache, stuffiness in the attic of the nose, pains back of the eyes, tenderness of the eyeballs upon pressure and nasal discharge, which is blown from the nose or drains continually, drop by drop into the post-nasal space on the affected side. Examination of the nasal cavity will show marked redness and swelling of the middle turbinal, which is often covered with glistening mucus. Pus from the anterior cells drains into the middle meatus and can be seen under illumination, while the pus from the posterior cells drains into the superior meatus and can be seen under illumina-

tion, while the pus from the posterior cells drains into the superior meatus and back into the naso-pharynx and by examination with a post-nasal mirror can be seen draining over the tip of the middle turbinal, along the lateral wall of the naso-pharynx and into Rosenmüller fossa.

Unilateral, chronic suppuration is more frequently observed and results primarily from an acute inflammation, which, on account of insufficient drainage and often altered-systemic conditions, fails in recovery. Imperfect drainage with the retention of pus, may bring about caries and polypi. In fact the presence of polypi, according to Grünwald and others, is more frequently due to ethmoidal suppuration. I think most operators will bear out this conclusion, that not infrequently polypi are only observed after the removal of the anterior portion of the middle turbinal. The symptoms leading to discovery of polpi in this region are headache, pain in eye, congestion of the upper nasal mucosa and apposition and pressure of the middle turbinal against the septum nasi. Bulging of the middle turbinal forward and downward from an accumulation of pus in the ethmoidal cells, completely filling the nasal chamber, may rupture through the ocular adnexia with the formation of a fistula and may result from a condition of chronic purulent ethmoiditis.

Diagnosis of Acute and Chronic Purulent Inflammation of the Sphenoidal Sinuses.—Acute inflammation in the sphenoid cells is possibly more often overlooked than otherwise. The greatest danger of allowing this condition to continue undiscovered is the liability to involve the bony structure and bring about an inflammation of the optic nerve. Among the clinical symptoms of acute inflammation of the cells are aggravated post-nasal catarrh, pain of a deep boring character in the back of the head and ears, general malaise and rise of temperature. The discharge from the sinuses drains into the recesses spheno-ethmoidal and thence into the pharynx. Eye symptoms are often well pronounced in blurring of the vision, protophobia and sometimes ptosis.

Chronic inflammation in this region may continue for years, the conspicuous symptoms being dropping and expectorating of

mucus and pus from the vault of the pharynx. Crusts sometimes form in this region, due to the evaporating of the watery constituents, which leave the dry residue behind.

Upon rhinscopical examination, the anterior naris will often be found quite normal: posteriorly will be observed mucus, pus and sometimes crusts in the pharynx. According to Turner, pus in the suprameatus is suggestive of sphenoidal suppuration. In many cases, the diagnosis is only cleared up by the removal of the middle turbinal and catheterization of the sphenoidal cell.

Treatment of Acute and Chronic Purulent Inflammation of the Accessory Cavities.—Local treatment of acute and chronic inflammation of the accessory sinuses is, broadly speaking, the same. Attention to the general health is always indicated. Syphilis, being a great factor in the causation of suppuration in the ethmoid cells, should be looked for. Since so many inflammatory conditions are dependent upon obstruction in the nose and faulty breathing, our attention is directed to a restoration of the caliber of the nose by the removal of all hypertrophia and other obstructions and a reduction of the catarrhal inflammation of the mucosa by milk alkaline sprays and douches.

For cleansing there is nothing better than warm Dobell's solution. If a boggy condition of the lower turbinal is an exciting cause of obstruction in breathing, the galvanocautery can be used to advantage for its reduction. In the application of the cautery, due care should be taken that no injury is done to contiguous parts. The line of cauterization is through the middle of the body and in its long axis, avoiding, as far as possible, destruction of the periostium. In the absence of the cautery, chromic acid fused upon a probe may be used.

If the middle turbinal is at fault, it should be removed with snare and scissors. Polypi can best be removed with snare. Palliative measures, when there is an enlarged middle turbinal is time lost. Surgical measures, indicated in many chronic purulent conditions, aim at the same general condition, though pursuing a radically different course in each case.

Surgical Treatment of the Maxillary Antrum.—For opening

the maxillary antrum, four practical methods are at our disposal: the Alveolar, Kuster, Caldwell-Luc and Jansen.

The Alveolar operation is, as is well known, performed by extracting the first molar and drilling through the socket of the tooth into the antrum.

The Kuster operation, briefly, consists in opening through the outer wall at the canine fossa, thorough curetment, irrigation, mopping the wound with a pure carbolic acid and packing the cavity with antiseptic gauze, which protrudes into the labial wound to prevent easy closure.

The Caldwell-Luc operation consists in opening through the outer wall as in the Thessler operation, followed by the removal of a knuckle in the inner wall beneath the lower turbinal. In the Caldwell-Luc operation an incision is made along the gingivo-labial fold of the upper jaw. Hemorrhage is controlled by pressure and hemostatic forceps and mouth packed with gauze. With drill or scissors and bone-cutting forceps, an opening is made sufficiently large to admit of examination and curetment of granulation, polypi and necrotic tissue. After thorough cleansing, an opening is made through the inferior meatus about a centimeter back of the interior insertion of the lower turbinal. This is done especially to avoid wounding the lachrymal duct. The external wound is now completely closed with stitches. The cavity is successively packed with an antiseptic gauze and allowed to heal by granulation. The operation of opening through the inferior meatus without interference with the outer wall is that described by Holbrook Curtis and is, I think, ideal. As shown in figure, under antiseptic cocain anesthesis, the anterior portion of the lower body is cut away close to the lateral wall, then with a drill and biting forceps, a large opening is made directly into the suture.

Hemorrhage is controlled by a solution of adrenalin 1-5000. The cavity is now packed daily until recovery. In many cases of chronic empyemia, Krause's trocar is used for irrigating. This instrument is passed through the bony wall into the antrum. The cavity should be irrigated once daily with a hot solution of

boracic acid. In a case in which the teeth may be the exciting cause of antrum inflammation, a combined operation may be indicated, that is, opening through the alveolar process and intra-nasal wall.

The Jansen operation is primarily the same as the Kuster, with the addition that the middle and superior turbinal, operative treatment of frontal sinuses is only to be resorted to when nasal treatment, removal of obstructions, probing and irrigation have proven a failure. The frontal cells, on account of the position of the ostia at its most dependent position, drain most naturally. In consequence, it takes more than ordinary inflammation to close the natural opening. It may be for this reason that chronic purulent inflammation of the frontal cells is the most difficult to cure.

In the beginning it is hardly necessary for me to reiterate a proven fact, that nothing but a free exposure of the sinuses should be undertaken if an operation is at all indicated. There are many methods of operative procedure, notable among which are those suggested by Bryan, Hajek, Killian and Ogston-Luc. All these operations advocate, practically, the enlargement of the naso-frontal duct and obliteration of the anterior ethmoid cells so as to secure practical permanent drainage. The disposition of the external wall varies, according to the operation. Some operators advocate complete closure of the external wound, others partial closure, allowing a strip of gauze to pass from the external surface to the nasal cavity. The amount of deformity necessarily depends upon the amount of frontal plates removed and whether or not primary union of the edges of the superficial tissue takes place. With this in view, Czerny, Kuster, Lathrop and others have recommended osteoplastic operations.

The operation designed by Killian and known to the world as the Killian operation, consists in first making an incision under chloroform narcosis and rigid antiseptic precautions, from the temporal extension of the eyebrows to the middle of the base of the nose down to and through the peritoneum. The sinus is perforated with a chisel, care being taken not to wound the

mucous membrane. With a blunt curved probe separating the mucosa from the frontal plate, the vertical extension of the cell is discovered, and from this point a second incision is made in the median line down to and joining the primary incision at the base of the nose. The flap is dissected upward. The frontal wall as outlined is chiseled away, followed by curetment of the entire diseased mucosa. The ethmoid and even the sphenoid cells may now be opened. The floor of the sinus at its nasal portion is chiseled away and nasal cavity entered with sharp bistoury, the nasal mucous membrane is brought forward and stretched to the wound facing the nasal cavity. The flap of skin and tissue is now stretched into place.

The patient is instructed not to blow his nose but to suck all secretion back into the pharynx. The depression produced by the removal of the frontal wall according to Killian, is filled up by granulations and but little scar results. During the removal of the upper wall of the orbit in this operation, there is great danger of injuring the eye.

Opening the Ethmoid Cells.—Under strong illumination from head mirror and cocain anesthesia, the ethmoid cells can be opened by removal of the middle turbinal. The best way of accomplishing this is by cutting the anterior attachment of the turbinal with a curved Holme's scissors and snaring away with a cold snare. After the anterior portion of the middle turbinal is detached, the removal of the entire middle turbinal is comparatively easy. With a long curet and Miles' cutting forceps the ethmoidal cells are easily cureted and cleansed of any accumulation. The superior turbinal can be easily bitten away, thus expiring in the posterior cells. With the aid of adrenalin this operation is a bloodless one, comparatively speaking.

There is danger of the external and upper walls of the cells having become necrotic. In cureting the cavity, we must avoid passing directly into the orbital or into the brain cavity.

The subsequent treatment is directed to daily irrigation with a warm alkaline antiseptic wash.

The sphenoidal cells are more difficult of entrance and require

a fuller display of dexterity. After the middle turbinal is removed, the ostium sphenoidal is not so difficult to find. With a strong curet or Grünwald punch forceps, the anterior wall may be entirely removed. After the cavity has been completely opened, it may be swabbed with pure carbolic acid.

Irrigation previous to operation usually accomplishes very little. The pain is severe, which is, to say the least, very distasteful to the patient, who usually objects to a repetition.

Recovery after the radical operation, is, as a rule, from three to five weeks.

FOOTWEAR AND ITS INFLUENCE ON FLAT-FOOT.

BY E. D. CLARK, M. D., INDIANAPOLIS, IND.

It is a lamentable fact that the human race, whether civilized or savage, attempt to change or alter the body to accord with their ideas of beauty. As a result, it is well nigh impossible to find a normal foot in an adult. The use of shoes and stockings that to a greater or lesser degree interfere with the full function of the foot is practically universal. I will in this paper endeavor to bring to the attention of the society some of the abuses in footwear that are so common, and show how they may act as a strong contributing cause of flat-foot.

In studying the feet of children and nonshoe wearing people, we are impressed with the fact that the race has not inherited the deformities that are almost always present. The foot of an infant is practically normal. Upon inspection it appears flatter than it should. Dane has shown that this is due to a pad of fat which acts as a brace to the long arch until the foot becomes stronger. To make it easy to follow what I have to say, I will use Sampson's division of the foot into arches.

First, an outer one which is low and only slightly yielding.

Second, an inner one which is higher and much more elastic. The latter is the one usually spoken of as the long arch.

Both arches are permanent. The inner one is lowered and raised by movements of the foot when the outer one is very slightly effected by any movement of the foot. In the passive support of the arches, the ligaments bear the greater part of the burden, but during active motion the arches are relieved from much of the strain by the muscles of the leg.

The third is not a permanent one and is known as the transverse arch. When the body weight is thrown forward, it is flattened out, thereby widening the foot, giving the individual surer sup-

port. It is lessened by dorsal flexion and increased by plantar flexion.

The function of these arches is to impart ease and elasticity to the movements of the foot and to take away the jar of walking. It has been proven in studying skeletons so articulated that where the normal motion of the mediotarsal joint has been maintained, that in adduction the scaphoid slides under the astragalus and lifts it up thus raising the long or inner arch, and that in abduction it is pushed down.

One can easily prove this by assuming these positions. In the adduction position the greater part of the body weight is thrown on the outer part of the long arch, that part of which is strongest and best adapted to receive it. The position is one of strength and muscular support. On the other hand, if one assumes the abducted position, the greatest weight is thrown on the inner side of the arch, causing the foot to be rolled over inward into a position of weakness and legamentous support. Both positions are physiologic. Such positions must be assumed to enable one to walk comfortably over uneven ground. The position of abduction with promotion is the one assumed when the body weight is thrown on one foot or both in such a manner that equilibrium is maintained without muscular exertion. This position becomes pathologic however when excessive or used in other or all attitudes.

The big toe acts as a support to the long arch, owing to its ability to be adducted and in preventing the rolling inward which occurs in the pronated foot.

The point I wish especially to emphasize is that the abducted position of the foot is the natural means of supporting the long arch, and also that adduction of the big toe is an aid. Anything that will interfere with this natural position of adduction will weaken and lower the arches and is, in my judgment, one of the potent causes of flat-foot. Unfortunately almost all modern footwear tends to the abducted position, thereby throwing the weight of the body on this elastic long arch.

The muscular power of the foot is a strong factor in maintain-

ing the arches. If the foot of an infant be examined, it will be seen that there is muscular power in the movement of all the toes. The big toe can be voluntarily drawn to the inner side, and the fifth can be drawn to the outer side. The toes can be readily flexed. In an adult the muscular action has been so hampered by the footwear that many of these motions are lost or diminished to a great extent.

If the foot of an adult which has never worn shoes be examined, it will be found to present many of the characteristics of the infant's, except that there will be greater muscular power in the toes and relatively less fatty tissue.

We are inclined to think that the shoes, owing to the fact that they are not nearly as pliable and soft as the stockings are the only factors in distorting the foot. There is no question but that the stocking often plays an important role in deforming feet, and giving to them the position of abduction or the position of weakness.

The stockings usually worn are interchangeable and have pointed toes. During the early years of life, stockings have a greater influence in molding the feet than later, but even in the adult the effect is considerable. Tracings made of a foot in such a stocking bearing the full body weight, and then with the foot just resting on the floor, if compared with similar tracings without the stockings, will demonstrate that the stockings compress the toes, and not only interfere with adduction of the big toe, but even hold it in a position of hallux valgus. The effect of this unnatural position is to lessen or remove a natural means of supporting the long arch and a means of preventing the promotion of the foot.

The gait of an individual whose feet are deformed with such stockings, is no longer normal. Instead of walking with the feet parallel he will walk with feet abducted and everted. Instead of stepping squarely off from the end of the big toe, he will walk off from the side, consequently he will not walk with the same firmness or force and will not be able to endure nearly so much walking. In summing up the results of hallux valgus caused by

improper stockings, we can say that the whole foot works under a disadvantage and may be considered an etiologic factor in the causation and maintenance of the weakened and flat-foot.

The old Persian proverb, "To him who wears a shoe all the world is covered with leather," seems apt in the consideration of the influence of shoes on the human foot.

The shoes of infants have a marked influence upon the development of the foot. But children are compelled to wear interchangeable shoes. One would not think of wearing the left shoe on the right foot, neither should one allow it in children. Infants' shoes should be distinctly rights and lefts, also right and left stockings.

The proper shoe should be so constructed that the foot can voluntarily assume the position of strength, a position of adduction. The best way to secure such a shoe is to have a plaster cast made of the foot and a last constructed from it. It adds only a slight expense to one's shoes and it is far more satisfactory. Sampson says that it is as much of a physiological impossibility to wear a ready-made shoe as ready-made false teeth, the only difference being that the alveolar processes can not adapt itself to the plate, while the foot can in a measure adapt itself to the shoe. The following features are important in the selection of shoes. The shoe should be made so that the angle of lateral deflection should be the same as that of the foot in the adducted position: a straight inner edge and if hallux valgus exists, a little straighter than the inner edge of the foot. This will give support to the long arch. It should be convex on the outer border of the shank corresponding to the mediotarsal articulation. If this is concave at this point, we get pressure on the foot that will interfere with the foot assuming the position of adduction. The forward part of the shoe should be as broad as the weight-bearing part of the foot, wide enough to allow the toes to rest side by side on the sole of the shoe. There should be no spring in the sole to cause dorsal flexion; this interferes with walking and injures the transverse arch. The distance from the heel to the distal end of first metatarsal bone must be the same as in the foot. If the

distance is greater in the shoe than in the foot, adduction is interfered with. The heel should be broad and low.

There are so many things required in the perfectly fitting shoe that it is well nigh an impossibility to go to the store and get it. Much the best way is to have one's shoes made over a last made from a plaster cast of the foot.

It takes but a few years of such foot splints, I mean the improper shoe, to weaken the muscles to such an extent that the strong and straight walk has given way to the everted one. In the everted position, the strain falls upon the ligaments, the foot rolls around and the arch is lowered. When this condition becomes fixed, then flat or pronated foot exists with its train of distressing symptoms.

In these cases the constant stretching of the soft parts and grinding of the tarsal bones in their unnatural position against each other may lead to inflammation of these structures and result in the tender, rigid form of flat-foot.

Hoffman says: "As flat-foot is but the fixation and later the exaggeration of the position of weakness or rest, it is quite evident that the habitual assumption of such position may, and often does, eventually lead to deformity. The everted or resting position may be the normal one in standing, but never the correct one for walking. Prolonged standing is frequently the cause of flat-foot, while correct walking is never."

It will be impossible for me in the time allotted to go into the symptoms of flat-foot, and as they have been taken up more or less thoroughly in the preceding paper, I will go at once into the treatment. The form of treatment will depend largely upon the nature, grade of deformity and the duration.

The first object to attain in the treatment is to restore not only the normal contour but the normal attitudes and the power of voluntary motion of the normal foot.

Whitman says: "Complete cure is impossible unless normal function is regained." Our first object must be therefore to make passive motion free and painless to the normal limit. Many of the milder cases can be cured absolutely by educating the patient

in regard to the importance of observing certain rules that tend to overcome the deformity and muscular weakness. His attention should be called to the three elements of weakness. He must guard against valgus. Instruct him to throw his body weight on the outer side of the foot, also to guard against abduction by holding his feet parallel with one another in walking. He should be shown how the great toe can act as a support to the long arch of the foot. He should be shown how to use the muscles of the foot and calf of the leg in walking. For instance, to press down the soles of the shoes with his toes and to use muscles of the calf in extending the leg and raising the body on the foot from time to time.

Calisthenics are of the greatest value in mild cases, or in that stage of the deformity known as weak foot. The normal motion of the foot should be demonstrated to the patient and it should be pointed out to him that such motions are restricted in his case. He should be taught how to regain them by proper exercise. His exercises should tend to strengthen the adductors and plantar flexors. To do this the foot should be adducted and supernated, then dorsiflexed in the attitude of slight adduction.

Tiptoe exercise is especially valuable. He should place his feet in moderate adduction, then raise the body to the extreme limit, then sinking slowly resting the body weight on the outer border of the feet. This should be done from twenty to one hundred times. One should not lose sight of the fact, however, that the best exercise of all is the proper walk, in which the leverage power of the foot is employed. I have obtained the best of results frequently from this form of treatment.

In many cases, however, the patients are not able to prevent deformity voluntarily. In such cases a support is necessary to hold the foot in proper position and to relieve discomfort. In selecting a brace, it must be borne in mind that the deformity is not a simple letting down of the arch but that there is lateral deviation and sinking a compound deformity. The brace must then be so constructed as to hold the foot laterally as well as support the arch. Another important point in the construction

of such a brace is to have it relieved of the difficulty without restriction of the normal movements of the foot and thus interfere with the increase of muscular strength upon which the ultimate cure depends. Many of the supports used do not fulfill the conditions. Many of the braces, such as pads and springs placed beneath the arch to support it by direct pressure, do not take into account the valgur or abduction.

In the deformed and rigid foot a brace should not be applied until the proper preliminary treatment has been given the foot. In these extreme cases in which the foot is held rigidly in its deformed position by muscular spasm, there is more to do than to simply raise the arch. We have a deformity which consists of a dislocation in which the astragalus has slipped downward and inward from off the oscalcis, which in turn tipped downward and inward in a position of valgus. The fore part of the foot is almost entirely disused on account of the changed relations of the leg and foot. The greater number of these cases are in young adults, in which the extreme deformity is of comparatively short duration and in whom complete cure is possible. In the treatment of such cases one must overcome the obstacle that contracted ligaments and contracted muscles offer and reduce the dislocation. The patient should be anesthetized and the foot forcibly twisted into shape. When the patient is fully under the anesthetic, the contracted muscles relax and it will be seen that this accounts for about half of the restriction of motion, the remainder being due to the abnormal position of the bones. The object of the operation is to overcome the bony changes as well as muscular and ligamentous deformities, and to assure the patient against a relapse by fixing the foot in a position of extreme adduction and supination. This can usually be done with the hands but in some cases, where the rigidity is very great, it requires great force, and a Thomas club-foot wrench is of great value. The foot should be forcibly extended and flexed, abducted and adducted, the motions being carried out over and over again until you can without difficulty cause the foot to assume the position desired. In certain cases, it will be necessary to divide the tendo Achillis when,

for instance, the range of dorsal flexion is limited or when there has been great pain in the mediotarsal joint, when it is desired to remove the strain of leverage completely.

When the full range of motion has been regained, the foot is turned downward, then inward and upward in the position of extreme varus. According to Whitman by this manipulation, "os calcis is drawn under the astragalus and thrown into the supinated position, and the schaphoid is flexed about and under the head of the astragalus, which is then lifted to the limit of normal flexion." The attempt is always made to bring the extreme outer border of the inverted foot up to a right angle with the leg. The foot is then thickly padded with cotton and fixed in this position with plaster which should be extended to the knee. The pain following all this violence is in the most cases slight; indeed, the patient may be relieved at once of the pain he has so long suffered. Within a day or two the patient should be encouraged to walk with the aid of crutches bearing the weight on the outer part of the foot. It will accustom the patient to the inverted position and will tend to still further correct the deformity. The patient should not be confined to the house or bed even if both feet are involved.

The time the patient should be confined to the plaster will depend on the duration of the deformity. It may be said, however, to be from two to six weeks. When the plaster is taken off, a cast is made of the foot and a brace constructed from it. The foot should have the plaster reapplied until the brace is ready for the patient.

The method of making the brace is of great importance. It should never be fitted to the foot but always to a cast of the foot. The plaster cast must be properly made or we will not attain the highest results from the brace. The method I follow is the one laid down by Whitman.

"Seat the patient in a chair; in front of him place another chair of equal height; on it lay a thick pad of cotton batting covered with a square of cotton cloth. Pour thick plaster cream over the cloth. The patient then allows the outer

part of the foot, which has been previously smeared with vaseline, to sink into the plaster the cloth molded to the sole of the foot. The plaster is allowed to cover rather more than half of the foot. The long axis of the foot should be at a right angle with the leg and the sole should be in a plane perpendicular to the seat of the chair. As soon as the plaster is hard, its margin and the dorsum of the foot should be smeared with vaseline and plaster applied to the remainder of the foot. The two halves are then removed, smeared slightly with vaseline and bound together with a bandage. The interior of the shell is dampened with soapsuds and filled with plaster cream. In a short time the shell can be removed and we have a cast of the foot in a proper posture to receive the brace. Such a cast will be found to differ essentially from one made in the ordinary way."

Now that we have a proper model, we must construct or have constructed a brace. There is a wide difference of opinion as to what the brace should include and also as to what it should be made of. Prof. Hoffa contends that it should be made of celluloid. He gives as his reason, "that it can be put on in liquid form and must conform accurately to all the peculiarities of shape. If the model has been well made, the plate will fit perfectly. It is not cold, does not rust, does not injure the shoe, is not so expensive as the steel, is somewhat elastic though sufficiently strong. It is light. Can be made by the physician himself." Phosphor bronze has been used for foot plates. It is more malleable and more easily fitted, but plates sufficiently thick are much heavier than if made of tempered steel, and are more inclined to yield under weight. Aluminum and nickel aluminum are light but not sufficiently rigid, and corrode easily. Vulcanized hard rubber makes a light and comfortable plate, but it is thick and breaks easily.

Bradford, Loveitt and Whitman believe steel to be the best. I have found it perfectly satisfactory. The best sheet steel 18-20 gauge is cut after a pattern made from the model of the foot. It is then tempered so that it may be practically unyielding to the weight of the body. The brace should be so modeled that it

will clasp the weak parts of the foot as well as support the arch. There should be a broad internal flange to cover and protect the astragalonavicular junction. It should rise well above the navicular. The external flange should cover the calcaneocuboid junction and the outer aspect of the foot a sufficient height to hold the foot securely. The part upon which the sole of the foot rests should provide a firm, comfortable support yet reaching only from the center of the heel to just behind the ball of the great toe. If the brace is so constructed it will not restrain the normal motions of the foot, it is well to have the brace nickel-plated, or tin-plated, or galvanized to prevent rusting.

It is not necessary to fasten it to the shoe as it is fitted to the foot; therefore it finds and holds its place, thus it may be changed from one shoe to the other.

After the brace is fitted, the patient is instructed to throw his body weight upon the outer side of the foot. The shoe should be slightly tilted by thickening the sole and heel on the inner side. The patient will no longer turn his feet outward in walking, because this causes positive discomfort.

The patient nor the surgeon should consider the treatment at a close at this point. Systematic manipulation should be begun by the surgeon and the patient, the first essential being the attainment of free and painless passive motion in all directions. The surgeon should see to this part of the treatment himself at least once a day, and should see that the full range of motion be carried to the limit. Adduction is the only motion that will cause pain; usually abduction, flexion and extension are painless.

DISCUSSION.

Dr. Walker Schell, of Terre Haute: Mr. President, it is rather difficult to discuss this paper. In fact, it deals with most things that are relatively well known and admitted, the anatomical foot. There are a few words, however, that it seems to me may be said in connection with deformities of the foot, especially the deformities dealt with in this paper, the flat-foot, that should be emphasized. It strikes me that we, as physicians, should

recognize the enormous usefulness of the great toe. Just as the thumb may be considered as half the hand, in walking perhaps we should say that half the foot is the great toe. That is the greater arch, and that is the arch that for comfortable walking, for the use of the foot, needs to be maintained intact. This arch is on the line, as demonstrated by Myers some fifty years ago, as the proper line to maintain the foot in good strength. Now, just as the thumb consists of two, or more properly of three bones, because the metacarpal bones should be considered as phalanges and not as metacarpal bones, so the metatarsal bones should be considered as phalanges and not as metatarsal bones, and it is the useful bone in the lifting of the foot forward, in giving the requisite spring. Now, it seems to me, we should recognize the fact that if one is to walk comfortably the development of the foot should be commenced in early life. That is, children should not be too soon clad in stiff, inflexible shoe leather. One of the greatest blessings that can be bestowed upon a young subject, boy or girl, is to be permitted to use the foot in early life, that is, to go barefoot. It is one of the misfortunes of civilization, one of the misfortunes of large centers of population, that with the advance of our civilization social necessity compels the early use of the shoe. Now the foot in the lower animals is a very useful thing. In the quadigeminal animals, for instance, many of them are known as four-handed animals, owing to the usefulness of the hinder extremity; and there is no reason why the foot in man should not be more largely used, and more largely developed than it is. That would necessitate a larger exercise of the functions of the toe. It seems to me that persons who wish to be comfortable with their feet should perhaps each evening on retiring, when the footwear is removed, go through some calisthenic exercise calculated to develop and strengthen the muscles of the foot. Not only are the muscles developed and strengthened by this use, but the ligaments, which as every one familiar with the anatomy of the foot is aware, are of enormous size and strength, are by this alternate relaxation and tension developed and strengthened just as a muscle is developed and strengthened.

Just so the ligament is developed by alternate contraction and relaxation. If the ligamentous tissues are constantly on a strain, upon strain they give way; but if there is this alternate relaxation and tension the ligaments are strengthened. And so in the practice of walking we should alternately stretch and relax the ligamentous tissues of the foot. In that way the foot is made stronger. If the foot is natural, as the writer of this paper pointed out, the walking will be largely on a straight line. Among primitive peoples, the Indians, or people who have not had their feet deformed by footwear, they walk almost always in a straight line, or approaching the straight line. If you watch a considerable number of civilized peoples who have their feet deformed you will find they walk somewhat outwardly, as pointed out in the paper, which is not the position of nature but the position of deformity, and the position under which these ligamentous arches give way; and the very painful nature of these affections is evident to any one who has had to deal with them and try to correct them. These structures, the tendons and nerves and blood-vessels, are buried in these firm tissues and are well protected where the arch is natural, but where the arch gives way the tendons are stretched, and the nerves, placed upon stretch, become irritated and become intensely painful, and we have neuritis and neuralgias that cause painful suffering upon the part of the one the arch of whose foot has given way.

I don't know that any special exceptions can be taken to the doctrines of this paper. It seems to me they are well-founded, well-known anatomical facts. But it seems to me as teachers of the public, knowing the prevalence of this deformity, the number of people who are poor walkers, who can walk but little and that little with pain, that we should to some extent emphasize, from our position as teachers, upon the laity the necessity of natural walking, the natural use of the feet and toes and their development. We are becoming to some extent an athletic people, and our footwear in the later years has immensely improved. The pointed shoe has largely disappeared from our stores, and we are wearing better foot apparel than ever before; but we should

emphasize the necessity of not permitting fashion to take us back to the deforming pointed-toed shoes so much in vogue a year or two ago, because of their appearance; and we should insist perhaps that, occasionally at least, walking upon the toes be indulged in as a strengthening measure, although the constant maintaining of that position, it seems to me, would conduce to deformity, on the principle that if the ligamentous tissues are constantly stretched they will give way, but if they are alternately stretched and relaxed they will be developed and strengthened.

The Chairman: Dr. Tucker of Greencastle was also to discuss this paper, but he does not seem to be present, and the paper is open for general discussion.

Dr. J. Rilus Eastman, of Indianapolis: Mr. President and gentlemen, I beg leave to differ with my friend, Dr. Schell, of Terre Haute, when he says that this paper deals with well-known facts. Dr. Clark's paper deals with facts, but facts that are not well-known, absolutely not. When I heard Dr. Clark read this paper I was impressed more deeply than ever before in my life with the thought that the great Moloch of fashion is still bringing about great havoc, producing extreme deformities to an amazing degree. These facts are not generally known. To have this matter presented to us in this way is a great advantage to us. We know that flat-foot exists. We do not recognize how common flat-foot is. We do not realize that nearly every man's foot is more or less flat. We do not realize as we should the effect of deforming shoes, splints, as the doctor calls them. We have not appreciated that the turning out of the great toe, as pointed shoes will invariably turn it out, will bring about a loss in the inner arch of the foot that will bring this arch down. We find that dorsal flexion of the foot will bring down this arch. This is a matter to which we may well address our most earnest endeavor. It is a lesson which we may have in an indifferent way appreciated, and which we have not mastered. I submit that these facts contained in the doctor's paper are not well known. They

should be, but they are not. They are facts but they are not understood and are not well known. A certain distinguished American lady once said to Li Hung Chang when he was in this country that it was a pitiful thing that the Chinese women saw fit to bind up their feet the way they did. Li Hung Chang replied, "Yes, that is right; Chinese women do bind up their feet, but there are no vital organs in the feet." He meant that American women bind up their waists, producing laced liver and all sorts of deformities there. We haven't, I suppose, in the whole country a normally formed woman with a large waist. Their tight, high or wide, collars have elongated the neck so that we do not see now a perfect neck. We do not have the normal waist such as is seen on the Venus de Milo, and I don't think one American woman in ten thousand has normal feet. I say these facts are not appreciated as they should be. I think Dr. Clark has touched upon some very interesting points, one of etiology, and one as to treatment, when he says that exercise of the feet will prevent the development of flat-foot, and in cases of atonic flat-foot will do a great deal to bring about a cure. We find street-car motormen with flat-foot, but the conductor don't have it. The motorman stands in one position all the time, and his arch gives down. The conductor moves about and walks, and he don't get flat-foot. I have had a patient with flat-foot who worked at the lathe in the machine shop, stood all the time, and when he walked he walked like he was dragging a heavy load of chains. It is in men who have such occupations as that we find flat-foot very often.

Now, theoretically, it would be the proper thing to dispense with such braces as Dr. Clark has shown us here. It were a much better philosophy to say the guying muscles of this arch, the inner and outer arch, are weakened and broken down, and the proper thing to do is to strengthen them, that is suspend the foot from the ball of the foot to the heel and give these muscles in there plenty of work, and finally they become strengthened and strong. That was said also of curvature of the spine. Give these cases massage and faradic electricity and static electricity

and salt rubs, all sorts of calisthenics and these cases will get well, because the muscles are weak; but in practice I think every man who has to deal with a number of these cases will admit that unless you get rid of the superimposed weight of the head, just as in that bent back, the curvature will become more pronounced all the time; and just so with these cases of flat-foot: unless you put a compress under them, unless you support them in this unphilosophical way, if you please, you will find the deformity will become greater all the time. So that the practice which the doctor has described is the best treatment, and practically the only treatment for these cases of so-called spasmodic flat-foot, in which there is a breaking down of the arch, and an actual relaxation of these muscles.

I wish to submit a method of treatment of a case of atonic talipes valgus, which has proved efficacious, that consists in applying to the foot, after it has been placed in an overcrooked position, Ochsner's criss-cross dressing of adhesive plaster. I have used it in two or three cases of talipes valgus and found it, I think, superior to plaster of Paris dressing. Plaster of Paris can not support these ligaments as adhesive plaster can, which sticks more closely to the skin and which is to some extent elastic and supports the arch because it hugs so closely to the skin and fits so much more closely to these muscles and ligaments. I wish to leave that suggestion with you. I do not mean that the Ochsner's criss-cross dressing can take the place of plaster of Paris in supporting the flat foot after it has been operated upon by the open operation, or forcible adduction, but Ochsner's criss-cross dressing will give you good results in these cases of atonic talipes valgus where there is not a great deal of depression of the arch. In these cases which have been described as rheumatic arthritis by some physicians, they are not recognized; they are called rheumatic and neuralgic, but they are not recognized and treated for what they are; and that is why Dr. Clark's paper is right straight to the point.

Dr. J. H. Oliver of Indianapolis: Mr. President, our friend Dr. Eastman has said he had a half-baked concept of certain condi-

tions. I want to say that I have a full-baked, done-brown concept that the condition of affairs which we are now discussing is due largely to the footwear of the individual; secondly, possibly to the stocking, but primarily to the shoe itself. It is a condition of atrophy, of the weakening of these all important muscles to which Dr. Eastman calls attention; and I am sorry to say that I must differ from my friend Dr. Schell when he says we are advancing in our footwear. I think he is mistaken to a certain extent about that. We may possibly be advancing as far as the absolute shape of the shoe is concerned, and we emphatically are. The adoption of the inner straight edge and the anatomical last, so called, are distinct improvements; but the people of today, following the economical ideas of Americans in general, have taken to the use of the ready-made shoe exclusively. The ready-made shoe is a splint in itself, and it is a swindle. It has the inherent weakness of all ready-made splints; the patient must fit the splint and not the splint the patient. Now these shoes are made upon a universal last with a universal idea as to the height of the arch, and we put our foot down into them and we lace or button the shoe. Everybody's foot must fit the same height of arch, and you may find a high arch laced against a low shoe, or a low arch laced gainst a high shoe. What is the result? Necessarily the atrophy and breaking down and weakening of the arch, and necessarily abduction and eversion, and ultimately, flat-foot.

Now I think the secret of correction and the secret of prevention, which is worth tons of cure, lies in the footwear; that we must re-establish in his exalted position the shoemaker of the past. We must do as Dr. Clark says, make a plaster cast of our feet, if necessary, and have properly fitting shoes made. I was dumfounded some years ago in starting into the more careful inspection and treatment of weakened and irritable feet, to find that in Indianapolis there was hardly a decent shoemaker left. I had a great deal of trouble to find a skilful shoemaker. There were plenty of them that could half-sole a shoe, or put on an invisible patch, but when you wanted a shoe made to fit properly

to the foot it took me some time to find a skilful one. And when I found him I found that he was absolutely faulty and unable to make a properly fitting shoe. I think the doctor's paper is very timely, and I think that it would be well if he had emphasized the fact that we must go back to having our shoes made for us, individually, if we are going to correct this all-important weakness, which is becoming more and more apparent every day. The stocking may have something to do with it, but it is secondary and not primary. The shoe is the thing.

Dr. Hetherington, of Logansport: Mr. President, Dr. Eastman spoke of the difference between the feet of the motorman and the conductor. The motorman and the conductor will have the same kind of shoes on, yet one has flat-foot and the other has not. The difference is not in the shoes, but the difference is in the position and use they make of their feet. We have a man at home who formed the habit of walking on the side of his foot, and that foot is flat. The question is, is it not the habit with the conductor and motorman, the position in which the motorman stands, as much as it is in the shoes?

So far as the shoe is concerned I think the doctor has struck the keynote. If you can see my foot (putting it on the edge of the stage), there is a shoe I had made a couple of days ago. You will notice that shoemaker has been very kind to me. He has put a great big knot out here (indicating), run my toe over here, and here is what he has done to me (illustrating). I think the thing to do would be to educate the shoemaker. The trouble is he has been kind enough to give me room for this (indicating) instead of crowding my foot over. Instead of crowding my foot over he has kindly brought the shoe over to fit my toe. While it would be well to take a plaster cast of my foot, the difficulty is he has taken a cast of my foot, or a drawing of my foot, and he has made the shoe to fit my foot. I do not want a shoe to fit my foot, because my foot is not the right shape. I want a shoe that will change my foot, if possible, back nearer to the normal shape. There is no doubt in my mind but that it is the footwear that produces a large percentage of these deformed feet, and often

is the cause of flat-foot; but if you will notice you will find that the negro invariably has a flat-foot, and as to the mere question of flat-foot itself, I doubt if it furnishes the entire solution. That shoes do form a splint and produce atrophy I have no doubt, the shoe itself being made upon the wrong principle. I think it would be well if the doctor would take up the question of how to build a shoe, and then present us a paper on how to properly build a shoe to prevent the flat-foot; because the fellow that made this shoe that I have on is supposed to be an expert, and he made the shoes according to drawings, and it is comfortable; it feels good on the foot, except I can feel that it is still taking that toe further over.

Now here is a photograph in which the pointed toe shoe instead of pulling the toe over at this point (indicating) has pulled it over above. That patient has a large bunion that shows clear through the shoe, and the pointed toe has drawn the first phalanges over, or the second over, rather, where this one (exhibiting another photograph) has had a different form of shoe.

I think the doctor has struck the keynote on the shoe. The question is on the form of the shoe and how to instruct the shoemaker, and whether the plaster of Paris cast is the proper method of getting around having the wrong kind of a shoe made.

Dr. J. H. Ford, of Indianapolis: Mr. President, I do not think that is the keynote. You can not cure these feet, but you can help them. You can not cure them. The man is a cripple for life after he has once had the arch broken down. You can improve his habits, raise the arch and all that, but the time to prevent this difficulty is in childhood. The child should not be allowed to wear a shoe that impinges upon the inner arch, or the inner side of the foot. The child should not be allowed to wear a high laced shoe, so as to cut off the circulation of the foot, because the lacing of the shoe around the ankle will impair the strength of the foot, not only by damming back the return circulation but by lessening the quantity of blood that goes to the foot, and as a consequence you have atrophy from that cause. The time to prevent

this is in childhood. If civilization is responsible for this deformity, if it has this sin to answer for, it has bestowed one compensating blessing upon the race, and that is in making children dance. There is no exercise that I know of that will do so much to prevent flat-foot, and do them more good, than having them get up on their toes as they do in dancing; and it is a pleasant exercise—I do not desire to run counter to the opinions of any of my brothers who have other ideas on this subject, but as a sanitary and physiological measure I know nothing that will do threatened flat-foot more good than to send the children to dancing school and have them learn to dance, and have them dance. Have them dance as a matter of business. Getting up on their toes develops not only the foot but the calf muscles. See that they dance, and see that they dance in a low shoe, in a soft sole after it spreads across the arch of the foot. It braces up and shortens up the long arch of the foot by strengthening the muscles that control that arch, that is the calf muscles; and I know nothing that compensates so much for the sins civilization is guilty of as the introduction of the dance for children.

In my earlier days I was raised among the Miamis, and the Miami Indians were as active on their feet as any Indians, or any persons I know, and they all toed in. Their feet were absolutely straight. They could pick up anything with their toes. I have seen a Miami girl pick up a handful of gravel with her toes and rub it on her shin to knock off flies as readily as she could do it with her hand and fingers. Her toes are straight out, and she is able to control every toe singly, because she never wore anything but moccasins, and the chances are she never had anything on her feet.

I think the keynote of the whole business is to prevent its taking place, like the man who knocked down seventeen men and prevented a riot.

Dr. H. R. Allen, of Indianapolis: Mr. President, our Big Chief has given us a beautiful little Miami talk, and there is good sense in it. I have had a number of children brought to me that had congenital flat-foot, that is, they were congenital if you would

look at the feet of their parents. They were flat-footed; looked as if they were made to be flat-footed. Take those children barefoot out on the gravel, and what do they do? They pull up the inside of the foot. When a child does that he is building up his arch. Let your little children run barefooted. There may be objections to it, but call the attention of the parents of the children to the advantages of it, and the importance of building up the arch; but don't go to the other extreme. I had a case a few months ago, an old lady sixty-five years old. She had a talipes equinus of her left foot. It came from infantile paralysis that started in when she had seen about six months of life. She opened up her closet and there was about eighty dollars worth of home-made hand-made shoes. What has become of our cobblers? We have really good reason to hope they may come in again sometime; but there is something greater than the cobbler, and that is the great financial system that is building three dollar and a half shoes that has come to stay. If we can change the shape of these shoes that is one thing gained, and that is about all we can hope to do. We can not go against commercialism. There is the practical point. Possibly we can do something to obliterate the pointed shoe.

We have heard an excellent paper by Dr. Clark. It is a selective paper. It is not exclusive. It has simply excluded all except one condition of patients who require this form of treatment. Dr. Eastman spoke of a good form of treatment with the adhesive plaster. There are lots of good things. The point is to get the orthopedician who is capable of selecting the appropriate method for the foot in question. There are all varieties of treatment, some of them good, and some of them that ought to have been condemned before they were started. I have an example of one form of treatment that has been condemned, fortunately before it went very far. I have a few casts here I would like to show you, because this is a subject which is interesting about this time in the year, because it is during the hot weather that you get this class of patients, because that is the period of muscular relaxation, and you can count out the muscular resistance that you have to overcome when it is a little bit colder.

The case I refer to is this foot (exhibiting cast). You can see there is practically no arch at all. The foot bulges down. This is the result of a burn in infancy. You can see how the scar tissue has contracted and pulled up that side of the foot. That would suggest one form of treatment: If you can produce a flat-foot by a scar why not burn the other side of it and cure the valgus? Your reasoning is simple enough. I am not advocating scar corrections, not by any means—it has been tried and abandoned. I just wanted you to see, though, what a scar will do in the way of deforming a foot.

Here is an example of what is done by the pointed toe shoe. (Exhibiting another cast.) You see that toe laps clear across that one. It requires no effort to hold that toe in its position. It simply lies down loosely across the other toe. It is the result of wearing the pointed toe shoe.

Here are two cases—I believe these are the first cases that have ever been exhibited of either kind at any of our State meetings—of congenital flat-foot. There was congenital absence of the fibula in both of these cases; also compound intrauterine fracture of the tibia; here is the scar line. Here is the point of one of the fragments of the tibia. That was a very clever reduction of a fracture in the dark, in utero, done by the patient upon himself. I don't know how it happened, but here is the result, the scar tissue adherent and inclosing the fracture of the tibia. There is one toe short in this case (indicating), and two short on this one. They are interesting, and I will leave these two for you to look at, if you want to come up and look at them here later.

Dr. Clark had some photographs which I hope he will show you; some of them included a Chinese lady's foot. Here is a modern Chinese lady's foot (exhibiting cast), and I will say that this is really a large Chinese foot—that is a foot of one of the aristocracy, and a large one at that, although there is not much to it, either. I would ask Dr. Stevenson, who has spent many years in China, if that is not a large Chinese foot? Is not that correct, doctor?

Dr. Stevenson: Yes, sir; that is a large one.

Dr. H. R. Allen, of Indianapolis: Now, here is another. Unfortunately, this one goes back beyond the time of the organization of the State Medical Society. This is the foot of a Chinese mummy. It is hundreds of years old. It shows the difference in the method of producing these fashionable deformities. Now, the foot is wrapped around from the outside in. It is overlaid here. In the days when this mummy one was produced they started on the inside and wrapped out. It was a matter of fashion, or probably a surgeon's notion, used to produce these deformities.

Now we have here a typical valgus (exhibiting cast). Here you have your valgus (indicating); here you see the line of the tibia, setting clear off inside of the foot. Now there is an interesting feature about these feet; on the bottom they are perfectly flat. I had the patient put his weight on there and stand in plaster, and when we come to take the cast off to get the lower negative he had forced all the plaster out underneath, and there was no imprint of anything except of the little minute lines on the skin. I then put him on a pad and had him stand, and produced a hollow in the soft material in which the arch was completely gone. This suggests the treatment.

Here is a case that calls for open operation. Dr. Clark did not discuss that. He could not; it had no place with what he went over; his paper was limited to one variety of case.

In regard to tubercular bones in the ankles, the history of some of these deformities, you have some of these deformities allied with tubercular astragalus, you know, and the history will be old; it will be old in flat-foot unless you catch the first summer attack. There is more than one case, and the treatment must be different in these feet from what it would be in flat-foot deformity.

The Chairman: I will now call on Dr. Clark to close the discussion.

Dr. E. D. Clark, of Indianapolis: Mr. President, I have but very few words to say in closing. Sampson says in regard to

getting a ready-made shoe that is almost as difficult, if not quite as difficult, to get a shoe to fit the foot as it is to get a set of false teeth to fit the mouth, but the structures about the mouth will not yield as readily as the foot. In making a shoe that will fit the foot I believe the ideal method is to make a plaster cast of the foot and make the shoe from the plaster cast. Sampson, of Baltimore, found that a very proper way.

I wish to thank the Society for the kindly manner in which the paper has been received.

ACUTE DIFFUSE SUPPURATIVE PERITONITIS.

BY S. J. YOUNG, OF VALPARAISO, IND.

Many men of many minds have written about peritonitis. The theme is old, but not exhausted—not while surgeons are reporting 100 per cent. of mortality. I shall confine myself to a discussion of the acute diffuse suppurative form of the disease, and will consider especially the treatment. For etiology and classification I will refer you to the publications of Senn[1], and Bayard Holmes[2], whose monographs are exhaustive and scholarly.

In the study of this subject my purpose has been to secure the experiences, methods and opinions of a considerable number of surgeons, for comparison. This I have undertaken by correspondence and some references to literature. Fifty letters were addressed to surgeons in various sections of the country, information being sought on lines suggested by the following questions:

1. Do you make it a rule to operate acute diffuse suppurative peritonitis?
2. If not, what are the contraindications?
3. How many cases have you operated, and with what mortality?
4. What is your method of operation and treatment?
5. Did you ever refuse to operate? If so, when and why?

Not specific answers, but free discussion was invited. Twenty-five answered—some in detail. A dozen sent courteous regrets. From the remainder no answers were received. To all who so kindly responded I am under obligations, which I hereby acknowledge with sincere thanks. Many of the letters received were scholarly and instructive. I wish that I might publish them in full, but that is manifestly inexpedient. I therefore give you brief excerpts, as follows:

B. F. Curtis operates except when patient appears too weak to

withstand the ordeal. Stagnant venous circulation, cold extremities and poor pulse are contraindications. He advocates flushing, drainage, ice coil and opium.

H. L. Burrell, of Boston, makes it a rule to operate. He reports at least one hundred cases, and recalls "a few instances in which recovery has occurred." He irrigates, drains and puts the patient in the Fowler position. Occasionally, when in doubt as to how diffuse the peritonitis is, he uses Ochsner's treatment for a few days.

VanBuren Knott, of Sioux City, was among those who gave detailed information as to his methods of treatment. He always operates unless patient is moribund. He has kept records only since 1902. Since that date he has operated upon nineteen cases, with seventeen recoveries and two deaths. He employs the median incision, above or below the umbilicus as indicated, and at once repairs any leak or diseased part that may exist. Through a two-inch incision above the symphysis he places a tube 1½ inches in diameter, carrying a gauze wick to the bottom of the pelvis. In females a similar tube, without the gauze wick, is placed in the culdesac. Gallons of hot salt solution are used to flush the abdomen, enough of which is left in to entirely fill the cavity. With an additional drainage tube in the pelvis similar to the first, but without the wick, the patient is raised to the Fowler attitude while yet on the table, transferred to the bed and kept in this position. Through this plain tube in the pelvis he pumps out, every two hours, such excess of fluids as are not carried off by the wick. This is done for twenty-four hours. He thinks by leaving in the abdominal cavity a large amount of saline solution a strong current is established toward the lower pelvis.

D. N. Eisendrath operates all cases where diagnosis has been made during the first twenty-four to seventy-two hours. As contraindications, he mentions extreme sepsis, as shown by a pulse of 180 to 200, excessive distention of the abdomen, which denotes a complete septic paralysis of the gut, as well as constant vomiting. He thinks these latter cases, however, are those in which a diagnosis has not been made until the fourth, fifth or sixth day

after the onset of perforation. Prior to his adoption of the Fowler position, he reports seven cases with a mortality of 100 per cent. Since using the Fowler position he has had three cases, all of which recovered. He washes the abdominal cavity with three or four gallons of hot salt solution and inserts a Mikulicz (or umbrella) drain of plain gauze. Where the drain goes through the skin it is surrounded with long strips of loosely folded gauze, which is frequently changed within the first few days after the operation.

Charles A. Powers, of Denver, says his mortality has been very high—over ninety per cent. Abdominal irrigation with hot saline solution, free drainage and the Fowler position are the essentials of his technic. He thinks the mortality will diminish as time goes by. He commends the treatment of Blake, "whose statistics on this subject are the best that we have thus far."

Joseph Rilus and Thomas B. Eastman make it a rule to operate all cases unless moribund. They report seven cases, with one death. Their method is celiotomy, lavage, very gentle manipulation of the intestines in search for abscess or perforation, and tube drainage from bottom of pelvis, with patient in Fowler's position.

George Tully Vaughan reports sixteen cases, with four recoveries and twelve deaths. He uses irrigation and drainage, and refuses to operate only when patient is moribund.

John A. Wyeth does not operate all cases. In cases of seemingly diffuse mild peritonitis, progressing slowly from the first indications of the disease, he adopts the Fowler position, gives calomel and flushes the colon from below with salines. He reports two cases within two years of general diffuse peritonitis in children which had developed in connection with colitis due to intestinal indigestion, and both were relieved, without operation, by this method. Rapidly developing general peritonitis, from symptoms of gangrene of the appendix or perforation, he says, require operation, and the seat of the infection should be sought out and removed. He flushes with sterile water, 100 to 105 degrees, with a long tube, beginning above the liver, spleen and stomach,

and underneath these organs, and around on either side, carefully, under high pressure, using volumes of water until the fluid comes out clear. In women he opens the culdesac and drains, and in men through an opening above the pubes he puts in a pelvic pack.

Among those who take a pessimistic view of operative treatment is Roswell Park. He says: "I have had such small measure of success in attacking diffuse suppurative peritonitis that I avoid operation on it if I possibly can. I feel that the contra-indication is the fact of its being suppurative and diffuse."

Byron Robinson prefers to wait. He says in answer to my first question: "I operate on any peritonitis which does not appear to check by anatomic and physiologic rest. If anatomic and physiologic rest checks the distribution of sepsis, I wait a while. I do not operate on the dying." His method is incision and drainage, with incision into the colon for the relief of distending gases.

Dr. Binnie, of Kansas City, says operation is the only logical method of treatment, but he has seen more cases recover unexpectedly without operation than with. He is convinced that almost all cases where the abdomen is much distended and diffuse suppuration is present will die, no matter what the treatment.

Hunter Robb does not think it necessary to carry out any immediate operative procedure, except in three or four out of a hundred in which the pus that has escaped into the peritoneal cavity contains virulent organisms. He says: "If operative procedures are carried out during the acute stage the mortality is high, due in most instances to the shock of operation. Where I have opened the abdomen in the acute stage of the disease, the death rate has been about ten per cent. By waiting, however, until the acute symptoms have subsided, and then carrying out operative procedure, the death rate is under five per cent." He operates by a vaginal incision, irrigating and packing the pelvis with five per cent. iodoform gauze.

Parker Syms makes it a rule to operate on diffuse cases. He says: "I believe there should be a careful distinction made between diffuse and general acute suppurative peritonitis. I believe that general acute suppurative peritonitis is fatal in one hundred

per cent. of cases, no matter what plan of treatment is employed. I believe diffuse peritonitis should give satisfactory results if properly operated upon. Of course, there will be a pretty high mortality rate. My method is removal of the original focus, sponging out of the sero-pus and careful drainage with gauze and rubber tissue. I use peroxide of hydrogen locally. I do not believe in flushing. In the routine after operation I employ the physiological rest to the stomach and alimentary canal, as prescribed by Ochsner. I often prescribe the upright position suggested by Fowler."

L. L. McArthur operates except in the moribund state. He reports one hundred cases, out of which he saved twenty-three. He uses irrigation, pelvic drainage and the Fowler position.

Dr. Senn has no fixed rule for operating. He selects his cases. He claims as contraindications, subnormal temperature, pulse 150 or more, and great abdominal distension. He could not state the number of cases operated. His method consists of free drainage, flushing, and, if necessary, multiple incisions.

W. J. Mayo reports about thirty cases, with at least fifty per cent. of recoveries. He advocates quick abdominal incision and pelvic drainage, with the patient kept in a sitting position for four or five days. Contraindications are general sepsis, leaky skin, quick pulse and cyanosis.

R. C. Coffey, of Portland, Ore., believes that diffuse peritonitis is practically always originally local, seldom occurring primarily. He therefore makes it a rule to operate all cases, except in extreme shock, or in which the condition has existed for several days, and the patient is improving or is growing no worse. He does not give statistics; he considers them only relative, for the reason that there are comparatively few cases in which the entire peritoneum is involved. His treatment consists chiefly in carefully applied capillary drainage in sufficient quantities to absolutely dry the abdominal cavity within an hour or less time. For this purpose he has used more than one hundred drains in wicks the size of a finger in extreme cases. In general peritonitis he inserts a drain in each flank and one into the pelvis. If the peri-

tonitis is originally pelvic, he also uses culdesac drainage with rubber tubes and gauze. As a rule, he employs the Fowler position. In cases, however, which involve all of the abdominal cavity, a condition he thinks must frequently occur from a perforation of the alimentary tract. The Fowler position he regards as useless, owing to the fact that it will not drain the two kidney fossae. In addition to drainage, he has great faith in antistreptococcic serum or streptolytic serum. He commends Ochsner's method of starvation and stomach washing in these cases.

LeConte says the only contraindication to an operation is a dying condition of the patient. He employs copious douching with hot salt solution, free drainage, elevation of the head and shoulders in bed to facilitate pelvic drainage.

C. H. Mayo operates if due to rupture of viscera; also in the earlier stage of ruptured abscess if patient is reacting. He does not operate if patient is in the second period of subnormal temperature following the shock of rupture. In case of a ruptured viscus, the source is found and cared for, foreign material removed by irrigation, large glass drain in the pelvis, patient in sitting posture. If due to ruptured abscess, source of abscess is not sought for unless condition of patient is fair. No irrigation of pus derived from tissue or blood. He gives salines slowly by rectum and occasionally subcutaneously.

L. Sexton, of New Orleans, does not operate unless some circumscribed pus sac can be drained. He reports ten cases, with seventy-five per cent. mortality. His method consists of simple incision and drain through the dependent part, with as little handling as possible.

John Young Brown, of St. Louis, reports about fifty cases, with a mortality of about fifteen per cent. He operates all cases, unless suffering from profuse general sepsis. He deals first with the primary source of infection, then stabs above the pubes, puts a large glass tube in the culdesac and places patient in an exaggerated Fowler position. He has quit irrigating and handles the viscera as little as possible. He believes that the hitherto high mortality rate has been largely due to the attempts of surgeons to do too much in cases of widespread peritoneal infection.

A. McLaren, of St. Paul, operates upon all cases of acute peritonitis within the first forty-eight hours, from whatever cause. If from perforation of stomach or intestines, he operates at any time, unless he thinks the inflammation is going to become localized. If the trouble arises from perforation of the appendix, he seldom operates after the first forty-eight hours until the seventh or eighth day. If derived from the pelvic organs, vaginal section may prove conservative in the early stages, but is usually more satisfactory after an abscess is formed. Large glass tube drains through small stab wounds and Fowler position are a decided help in the worst of these cases.

Thomas B. Noble, of Indianapolis, says: Theoretically, there can be no contraindications to operation, for the reason that the peritoneum must be looked upon as a part of the lymphatic system through which the general organism is being charged with septic material. This, if allowed to continue, will overwhelm it. No one knows just how much "poison" has been absorbed at any time, and therefore one can never tell what case is "hopeless." He reports five cases operated upon, with only one death. He does not irrigate, but carefully sponges clean with gauze and establishes free drainage, the patient to be left propped up in bed. He refuses to operate only when patient is dying, and thinks then under local anesthesia some may be saved.

McOscar, of Ft. Wayne, knows of no contraindications to an operation. Even in extreme conditions, he thinks operation can not add to the peril, and that the chances, however slight, are bettered by operation. He reports three cases, all of which recovered. He advocates thorough cleansing of intestinal coils outside of the body with hot sterile water or normal saline. Every portion of the peritoneal cavity is irrigated. For relief of tympany he punctures and empties intestines at as many points as necessary, closing the punctures with Lembert sutures. Gauze drainage is left in four or five days.

J. B. Murphy has a series of twenty-four operations, with only one death. He protests against irrigation and handling of viscera. His method consists of tube drainage in pelvis, Fowler position,

proctoclysis and antistreptococcic serum. This report I obtained in conversation with Dr. Murphy, without stating to him the purpose for which it was obtained. His position on the question is quite well known, however, through his various contributions to the literature.

Now, let us analyze these replies.

To my first question seventeen said "Yes." Seven gave affirmative replies, with qualifications. One avoids operation if possible.

Question 2 developed the statement by fourteen writers that no contraindication to operation should be considered except the moribund state. Nine gave symptoms which virtually imply the same condition, while two did not answer the question.

In answer to question 3, statistics were supplied by twelve, a few of which were estimated. There were reported 374 cases, with a total of 232 deaths. This gives a total mortality of a fraction over 62 per cent.; a high death rate, to be sure, but it does not bear out the opinions that all will die, no matter what treatment is employed.

My fourth question pertained to methods, and it developed that fifteen were in favor of irrigation, while ten opposed it. The Fowler position was advocated by a total of seventeen. It was not mentioned by the others.

The answer to my fifth question tallied very closely with replies to my second.

In going over the methods of treatment, we find that operation is advocated in nearly every instance as the only rational procedure. The technic, however, varies considerably; prognostic opinions, likewise. We find here the optimist, who believes that nearly every case ought to be saved. We are not without the pessimist, who thinks all will die. And, as usual, we have intervening shades of opinion. Is there anything in these reports to account for such variance in belief? Let us question them still more critically.

Points upon which there is no contention are: (1) Free drainage, and (2) the Fowler position. True, the methods of drainage

are somewhat at variance, but all are primarily agreed upon its use, and all place it in the pelvis, and in other regions as indicated. Irrigation is favored by the majority, but those who use it seem to have the highest mortality. They report, altogether, 252 cases, with 199 deaths. This is a mortality of 79 per cent. Where irrigation was not employed 92 cases were reported, with a total of 18 deaths—a mortality of less than 20 per cent. This looks significant.

I am aware that there is liability to error in these figures. Other factors may have figured in the cases to some extent. Still, the difference in death rate is so striking that it challenges our attention, and needs an explanation. I know that some operators report success with irrigation. Levings (3) recently reported ten cases operated in ten months, with nine recoveries, and in each case he flushed the abdomen with acetone solution, 1 to 10,000. Note, however, that he applied it through the drainage tubes, without handling the viscera.

Among English surgeons I find C. A. Balance (4) warning against the practice of irrigation and handling the viscera. He thinks the heavy death rate in the past has been due to these methods. Also, in a recent issue of the Lancet, in the Erasmus Wilson Lectures on Peritonitis, Dudgeon and Sargeant (5), who investigated a series of cases at St. Thomas' Hospital, report 119 cases of diffuse peritonitis resulting from perforations in appendicitis. Of this number 100 were treated in the ordinary way by lavage with sterile water or salt solution. Eighty of the patients died. The remaining 19 were sponged locally, and drained without flushing, with ten deaths.

This gives 80 and 47 per cent., respectively, for the two methods. None of the cases was selected, save that a few of the latter were given this conservative treatment because they seemed hopeless. The writers unhesitatingly indorse the method which gave the most satisfactory results.

There is another element in these reports which undoubtedly modifies statistics. I refer to the laxity in the use of the term "general" peritonitis. Senn (1) directed attention to this in 1897.

One or two of my correspondents have emphasized it, and I find a note of warning in the excellent lectures (5) above referred to. Every case of peritonitis at first is local. When it is not limited by adhesions, these writers prefer to call it "diffuse," the term "general" or "universal" being reserved for cases in which the entire peritoneum is involved. They claim, also, that no accurate opinion can be formed at the time of operation, as to whether a case is diffuse or general.

If it be true that the method which omits flushing and handling and sponging gives the best results, as it seems to do, what are the reasons therefor? Let us examine the processes by which nature combats the infection. They are:

1. A serous exudate.
2. A fibrinous exudate.
3. Hyperleucocytosis.
4. Route of absorption.
5. Anatomical and physiological rest.

(1) The serous exudate serves to dilute the toxins of the infections, and, perhaps, has a tendency to neutralize them with antitoxins. We may assist in this dilution by flushing, but there is a better way. Water introduced slowly by rectum will accomplish the purpose without traumatic effect upon the peritoneum. It also favors elimination. Murphy (6) says eighteen pints of salt solution may be introduced into the rectum in 24 hours, and retained, if introduced slowly under low pressure (one foot elevation). This I consider a most important element in treatment.

(2) We all know something of the benefit to be derived from a fibrinous exudate. It tends to wall off the infection and change a diffuse into a circumscribed inflammation. It helps to protect the endothelial coat from the destructive effect of toxins. A blistered peritoneum is a distinct menace to the life of the patient, for the reason that it allows absorption to take place directly into the blood stream. Dudgeon and Sargeant (5) observed that the staphylococcus albus was the first organism to appear in peritonitis and the last one to disappear. It was always associated, when present, with a fibrinous deposit. They believe it has an influence upon the formation of the fibrin, as well as with the attraction of

leucocytes into the field. The leucocytes produce a turbid appearance in the fluid present, and the surgeon has been trying all along to remove this creamy substance, which really is nature's bodyguard, fighting the infection. The point is, let the fibrinous exudate alone. How differently from the recommendation made to the French Surgical Congress by Demons (7) a few years ago, viz., to scrape the entire surface of the intestine.

(3) Hyperleucocytosis, generally, is an expression of the natural resisting power of the individual, as compared to the amount and character of the toxemia present. It is favored by such measures as conserve the patient's energy, and the fact that leucocytes are present in the exudate in large numbers is no indication for flushing. Pus goes in the line of least resistance. You can not remove it from the peritoneal cavity without breaking up the fibrinous deposit, uprooting the endotheleal cells and producing multiple atria of infection. Give it an outlet and leave the rest to nature.

(4) Robinson (8) and other observers have demonstrated that the place of greatest absorption is the diaphragmatic pleura; also that absorption takes place primarily through the lymphatics, chiefly in the direction of the thorax. Muscatello, in his experiments upon dogs, showed that the upright position retarded but did not prevent absorption by this route, and, furthermore, there was no evidence of absorption by any other channels. The abdominal organs, after five and one-half hours, contained none of the reagent used in the experiment. This explains the efficacy of the Fowler position, after operation. Absorption is delayed and time is gained for the patient, and time is an important element in the fight.

(5) Nature enforces rest by inflicting the patient with pain. The normal peritoneum is practically without pain sensation. When it is inflamed, the pain is terrible. As a result, the diaphragm and other muscles are fixed; the parts are placed under enforced rest. Robinson (8) says the diaphragm acts as a force pump, sucking up the fluids from the peritoneum during respiration, and forcing them onward through the lymphatics. If this

be true, rest is greatly to be desired. It also tends to limit the spread of infection throughout the peritoneal cavity, for it must be remembered that diffuse inflammation is not of necessity general.

To sum up, I believe the indications for treatment are:

1. Early operation—and it must be remembered that this implies an early diagnosis. Do not wait for shock, which is a symptom of overwhelming infection. Learn to recognize the early symptoms as stated by Murphy (9): "Pain, nausea and vomiting, localized tenderness, circumscribed flatness on piano percussion, elevation of temperature and hyperleaucocytosis, in the order named." I repeat it, operate early.

2. Method—simple incision with simple drainage, placed in pelvis and such other fossae as seem to require drainage. Perforations should be closed, and appendix removed if it be the offender, provided these things can be done without too much handling of the viscera.

3. Fowler position to retard lymphatic absorption.

4. Normal salt solution by rectum, one and one-half pints every two to four hours for 24 to 48 hours.

5. Antistreptococcic serum, in hope to combat the effect of toxins absorbed.

REFERENCES.

1. Senn: Jour. Amer. Med. Ass'n. Sept. 5, 1897.
2. Holmes: Illinois Med. Jour., 1904, vi, 499-515.
3. Levings: Clin. Review, Chi. 1904-5, xxi, 161-170.
4. Ballance: Lancet, Lond., 1904, ii, 1195-1200.
5. Dudgeon and Sargeant: Lancet,Lond., Vol. 1, 1905, 617-625.
6. Murphy: Prac. Med. Series, 1903, Nov., 282.
7. Demons: Trans. French Surg. Cong., 1890.
8. Robinson: The Peritoneum, Part 1, 288.
9. Murphy: Jour. Amer. Med. Ass'n., 1903, Apr. 11.

MALIGNANT PERITONITIS.

BY ETTA CHARLES, M. D., OF SUMMITVILLE, IND.

Malignant peritonitis during the puerperium, unaccompanied by sepsis of the genital tract introduced from without, is not mentioned by many of our authors on obstetrics. Dr. Edgar, in his work on practical obstetrics, describes this condition so well I give it in his own language: "Bacteria of comparatively low virulence bring about benign peritonitis or perimetritis; and under precisely the same circumstances highly virulent germs cause a general peritonitis. According to the general teaching, the latter affection follows most commonly upon an endometritis set up by highly infectious germs. Lenhartz, however, has shown the great relative frequency with which severe parametritis can bring about malignant peritonitis. But this affection is not due necessarily to lymphatic extension, since it may result from direct inoculation of the peritoneum by the contents of a ruptured uterus or a pre-existing abscess. It has been commonly taught that malignant peritonitis is usually a complication or feature of severe general sepsis, both being the natural consequence of highly virulent streptococci, but many case-histories seem to show that the general condition in malignant peritonitis is not septic infection of the blood, but profound toxemia caused by the rapid multiplication of germs over the entire peritoneal surface. In other words, malignant peritonitis may often represent a purely local infection, limited only by the great extent of the peritoneum. Malignant peritonitis is undoubtedly due to the high virulence of bacteria which spread over the peritoneal surface without any attempt at the formation of isolating adhesions. It does not appear that the germs are necessarily of unusual virulence before gaining the peritoneum, but may find conditions there which favor their rapid multiplication. Case-histories show that a woman may be fatally

septic and yet have only a localized peritonitis; while, as already stated, complete purulent peritonitis may not be accompanied by general sepsis. There is much evidence to show that lymphogenic malignant peritonitis is a phase of puerperal morbidity which is of its own kind, bearing no definite relationship to perimetritis, endometritis or septic infection of the blood. It is pre-eminently a streptococcus disease. The symptoms are those of general peritonitis from other causes. The most striking symptom is the extreme degree of meteorism, which results from intestinal paresis, and which produces compression of the thorax and dyspnea. The prodigous amount of toxins produced and absorbed tends to overwhelm the heart, and the pulse rate rapidly mounts to the neighborhood of 150. Ahlfeld regards malignant peritonitis as essentially a disease of the very early puerperium, most frequently of the first day. The chill is often wanting, and the rapid supervention of great agony referred to the bowels. Vomiting, restlessness and anxiety suggest that the patient has swallowed an irritant poison. Or the puerperium may begin favorably, then parametritis develops and eventually peritonitis. All authors speak of the euphoria and mental clearness which are sometimes presented by women who are nearly pulseless. They no longer feel pain nor distress. The symptomatology of this condition agrees with that of acute peritonitis from other causes. The diagnosis should be self-evident and the prognosis all but hopeless."

I was called at 3:00 p. m., January 6, 1905, to see this patient. She explained she was not suffering much, but wished me to see if she was going to be sick, that I might not leave town. Examination during uterine contraction showed dilatation beginning. I left, with instructions to be called when pains demanded it. Was called at 8:00 p. m. This was her second confinement. She had a daughter ten and one-half years old. The desire for another child had been so great, and the coming so anxiously awaited, that everything was in perfect readiness for it. After I left in the afternoon the patient took a bath, put on fresh, clean clothes, and the bed was put in readiness with all clean bedding. The clothes to be used had been especially prepared and put away. I had on a new gown and this covered with a large, freshly laundered

apron. I found the patient sitting by the stove, pains about every five minutes. Had her put on nightdress and go to bed. I washed the pudendum with boiled water and antiseptic soap, went over the parts with scissors and covered with bichloride pad. Labor was normal in every particular, a healthy, ten-pound girl being born at 11:15. Placenta and membranes came away without pressure over uterus. When I applied the binder she said, "Don't touch this side; it is so sore," putting her hand over the left inguinal region. I called the next day, found her with 1° of fever. Afterpains had been very annoying, and a pain she called "a stitch" in the left side was present, but the afterpains worried her most. January 8th, 7:00 p. m. Temperature 100°, afterpains severe, lochia abundant, uterus not so sore, bladder had been emptied freely, I gave Hinkle's cathartic. January 9th, 7:00 p. m. She had had a light chill, temperature 101°, pulse 90, uterus not so tender, had a good bowel movement, kidneys acting freely, lochia normal, milk coming into the breasts, pain in inguinal region increased and afterpains ceased. Ordered turpentine stupes and hot-water bag to left side and magnesium sulphate for the bowels. The character of lochia, the tongue, the milk coming into the breasts, involution of uterus and large amount of urine misled me. January 10th was called at 6:00 a. m. Temperature 106°, pulse 140, pain unbearable, enlargement of abdomen on left side with induration, uterus not tender, lochia normal in color and amount, mammary secretion sufficient and urine normal in color and amount. Put ice bags on abdomen, gave internally quinine and strychnine, and hypodermically 20 c. c. streptolytic serum. January 11th, 8:00 a. m. Temperature normal, pulse 100, symptoms all better and continued so until 3:00 p. m., January 12th. She had a chill, temperature 104°, pulse 120, pain all over bowels. Gave 20 c. c. serum and repeated in twelve hours. Temperature again fell to normal, pulse 99, and swelling began to go out of bowels.

January 13th. All the symptoms worse, increased abdominal swelling and induration extended to ensiform cartilage, pain radiating over chest was agonizing; temperature 104°, pulse 130. Gave 40 c. c. serum during the next twelve hours.

January 15th. Pulse too rapid to count, temperature 102°, chilliness and signs of approaching dissolution, respiration upper thoracic. Removed ice bags, gave morphine and strychnia, hypodermically, as indicated, catheterized patient and found urine scanty.

January 16th. Morning temperature 104°, pulse 130, gave 20 c. c. serum. Afternoon temperature 103°, pulse 128. Gave 20 c. c. serum.

January 17th. Patient greatly exhausted, pain all gone, and induration going out of bowels. Temperature 101°, pulse 120. The enormous distention of bowels produced compression of thorax and the accompanying dyspnea was most distressing. Could hear the fluid and gas churn in the bowels ten feet away. Could get no assistance of nature to empty bowels owing to meteorism and paresis. The ordinary rectal tube proving useless, I took a piece of an ordinary stomach tube, beveled the edge and pushed it up to the sigmoid, the lumen of the tube being large and non-collapsible, permitted gas and fluid to pour out. An abdominal binder was applied to support the flabby abdominal walls, and the bowels were catheterized every six hours. She remained in the same condition the 18th, 19th, 20th and 21st. The intestinal contents became normal in character and odor, all tenderness disappeared from the abdomen, urine normal in color, odor and amount, uterus could not be felt by abdominal palpation, examination of pelvic contents showed uterus had normally decreased in size; vaginal irrigations were begun at the first signs of sepsis and continued throughout. The 18th day after confinement lochia ceased, a slight mucus discharge taking its place, but not enough however, to place a napkin or soil the clothing. The 21st too zealous feeding caused some gastric distress and bloating. She was fed with Valentine's meat juice and Wyeth's prepared food, with the addition of cream to the latter. At no time was there a desire for food.

January 22d, a hypostatic pneumonia developed and lasted three days.

January 23d, passed a fairly comfortable day and night.

January 24th, temperature, 98½°, pulse 100, patient anxious and distressed, breathing labored, but got better toward night. At 3:00 a. m. the nurse called me, said the patient's temperature was 3° below normal and she had been unconscious a long time. I found her as described, mouth wide open, under jaw dropped down, cold from toes to trunk, from fingers to elbows. Soles of feet and palms of hands warm. Ordered bed filled with hot water bottles and hot blankets. Gave hypodermically spirits of camphor every fifteen minutes until four had been given, the heart responded at once. At 8:00 a. m. she regained consciousness; gave strychnia 1/60, glonoin 1/100, digitaline 1/100, hypodermically, every three hours all day and night following, also hypodermoclysis one quart normal saline solution.

January 25th. Patient had apparently ralied, temperature 98°, pulse 98, stopped all medication, gave rectal enema, eggs, milk. By evening temperature 98½°, pulse 99, respiration 30, gave peptonized milk, also whisky.

January 26th. Patient weak all day, cough persistent, mind wandering, talked all day, gave pot. brom. to quiet mind, and food as could be borne.

January 27th. Nurse called me at 1:30 a. m., thought patient sinking. Found her unconscious, respiration 20, tongue dry, unable to swallow, pulse running so fast could not count it, irregular, missing beats, radial artery laid close to the bone, fingers blue, nails dark, heavy drippy sweat on brow and lips, hands and feet warm, bony parts cold. Did nothing but wipe sweat from face and moisten lips with water. At 4:30 she showed signs of rallying; pulse beat more full, radial artery filled usual space, she opened her eyes, I asked her if she wanted water, she inclined her head, I let it trickle down and soon she swallowed, in thirty minutes I left her in charge of the nurse with instructions to give hot cream 1 drachm, hot water 3½ ounces, every two hours. At 7 a. m. the nurse telephoned me that she had roused up and asked for tea and crackers, which she ate and enjoyed; the first thing she had asked for in twenty-two days. At 9 a. m. pulse 100, temperature 98°, patient propped up in bed to aid breathing. She re-

mained in this condition throughout the day and night, but began sinking about 5 a. m. the 28th, and died at 1:40 p. m.

As there was no post-mortem I asked the undertaker to aspirate the abdominal cavity for pus. He reported none, only a small amount of clear fluid.

DISCUSSION ON THE PAPERS OF DR. S. J. YOUNG AND DR. ETTA CHARLES.

Dr. I. N. Trent, of Muncie: Mr. President, I have enjoyed the papers very much, especially the resumé of the reports or letters of these different surgeons and the variety of opinions as to the methods of procedure, and the varieties of result. The great variety of opinion as reported reminds one a good deal of the remedies for vomiting in pregnancy. It shows we have a desperate condition to deal with. It also shows we don't know how to deal with it. I am also convinced that there is no known method that should be adopted in all cases. A number of surgeons report, saying that they use such and such method in every case. I think that is wrong. Wrong in peritonitis; wrong in everything. Select the remedy according to the case. Usually in diffuse suppurative peritonitis, whichever plan you pursue you wish you had taken the other one.

I have been impressed with the favorable report of quite a number of these surgeons. I think there must be a mistake in the diagnosis. Some report one death in seven. That is a great deal higher per cent. of recovery than I am able to get in these cases. It is possible that the difference lies in the distinction between diffuse suppurative peritonitis and some other forms. At any rate I am inclined to agree with the essayist in treatment. I believe in the large drain; and if I was to assume any one position for all cases I would oppose the flushing and irrigation.

Dr. J. Rilus Eastman, of Indianapolis: Mr. President, the keynote of the whole situation, it seems to me, as relates to the treatment, and the explanation of the good results obtained by those men who have had good results, is to be sought in the circumstance that those men who have had good results have not drained;

have simply opened the peritoneal cavity and relieved the pressure, and put the patient in the Fowler position with a big cigarette drain, and let him alone. Deaver reported a number of cases without any deaths. Murphy reports twenty-four cases with one death. La Place and a good many others lose a good per cent. of their cases. It is only within the last two or three years that it has been generally understood that it is a fatuous thing to open the peritoneum and irrigate and swab out in a case of acute diffuse suppurative peritonitis. The thing is to open the cavity and relieve the pressure—a thing Dr. Young failed to call attention to—simply open the peritoneal cavity, put the patient in the Fowler position and drain, and don't try by fumbling around in the peritoneal cavity to find pus cavities and break them up. That kills the patient. The other will cure them in a very large per cent. of cases; in nearly all cases.

Dr. E. D. Clark, of Indianapolis: Mr. President, Dr. Holtz's experiments on four hundred dogs are very instructive in studying suppurative peritonitis. He found the peritoneum would take care of the most virulent cultures when it was uninjured, but if you take a pair of dissecting forceps and contuse the omentum, or the intestines, or any structures in the peritoneal cavity, that we would have death in a hundred per cent. of cases. I believe in Dr. Eastman's remarks absolutely, that all that is necessary for the surgeon to do, and the thing that will give more hope than anything else, is to open the peritoneal cavity and drain it; that the peritoneum will take care of more infection if we leave it uninjured; that swabbing and that irrigation simply adds to the dangers.

Dr. A. M. Hayden, of Evansville: Mr. President, I want to indorse what Dr. Eastman has said in regard to handling the peritoneal cavity. The fact that some of these cases have recovered is because I believe there is more harm done in irrigating the peritoneal cavity with salt, or any other solution, than good in cases of peritonitis. Handle the viscera as little as possible. Keep out of there. Relieve the pressure. Put in a large cigarette drain,

put your patient in Fowler's position, and you give the very best chance in the world. I want to indorse what Dr. Eastman has said, which corresponds with my own experience in the treatment of these cases.

Dr. Powers, of Richmond: Mr. President, it has been my experience that sometimes we are surprised at how long general peritonitis cases that are not operated on will live, the number of days that they will live, we thinking every day that they will die. Take those cases and do a prompt operation on them, and how quick they die. They will simply be dead in a very few hours. My little experience in those cases has been that if we will simply drain them, or if it is an appendicitis case, which most of these cases are, I usually make a secondary incision, and if I find the semilocalized condition I make such incision over the appendix; and if we take those cases and break up the adhesions we only open up new absorbing surfaces which will take the patient off quicker. If I do anything with the appendix I simply put a forcep on it, just put a clamp on it, cut it off or not, and put in drainage and get out quick. We do too much.

Dr. Miles F. Porter, of Fort Wayne: Mr. President, I have been a good deal interested in this subject for a good many years. I remember some years ago having read a paper on this subject before the Mississippi Valley Medical Society when the concensus of opinion seemed to be that most all cases of diffuse suppurative peritonitis died. Nine years ago Dr. J. B. Murphy and Dr. John B. Deaver, in discussing papers that were read there, both made the statement that cases of diffuse general peritonitis must always die. At that time and now I am here to say that all cases of acute peritonitis don't die, as Murphy has since that time proven, and John B. Deaver has proven, if properly treated. The term diffuse peritonitis is a very elastic term, and I think it is wrong to lay down any line of treatment with the idea that it can be carried out in any large majority of cases. The cigarette drain in some cases is simply blank nonsense. In other cases it is the best thing you can use. To open some of these cases and simply drain them is

nonsense. Open a case and put in a drainage tube where the belly contains four times more gas than it really has room for and that patient will die, whether you put her in Fowler's position or stand her on her head. It is the extreme, the intense tympanites and its effect that is overcoming that patient. Generally speaking, the conclusion of all the men, practically, that have talked on this subject is correct, in my judgment, and that is to do just as little in the way of surgical interference as will overcome the conditions that are threatening the life of the patient. If it is drainage that is required make an opening and put in your tube and put the patient in Fowler's position and let him alone. If its is widely diffused peritonitis a cigarette drain will not do this. If it is not so great it will, or a large gauze drain will sometimes do. If in connection with this drainage you have an intense tympanites then at the same time the bowel can be opened and the gas let out and your patient will get well in a great many cases. Of course, a large number of them will die. I am very glad indeed to know that it is coming to be looked upon as a sort of cowardice on the part of the surgeon to allow these extreme cases of peritonitis to die for the purpose of bolstering up the operators.

Dr. Wm. T. S. Dodds, of Indianapolis: Streptococci serum is a specific for the streptococci. It is useless in anything else. We forget that the human body is armed with a protective armor, and that there are two forces which result in disease or death or the recovery of the individual. The first is the infectious disease or the ability of the specific organism to invade the tissue, and second, the ability of the tissue cells to withstand the invasion. Our greatest help to nature is simply to relieve and lessen her work, not to increase it.

The Chairman: I am sure we would all like to hear from Professor Bryant, of New York, on this subject. Dr. Bryant, will you please come forward.

Dr. Joseph D. Bryant, of New York: Mr. President and gentlemen, there is nothing that I can add to that which has been already said, but my experience in these matters has been

quite considerable. I think it is perfectly fair for me to state that my disappointments have been correspondingly large. I think it is perfectly honest for me to state that my expectations perhaps in the future may be equally disappointing. I think it is perfectly proper for me to state that I know nothing that I approach with so much hesitation as to the final outcome as a case of general septic peritonitis; and I think I may be frank enough to say to you that I am not yet satisfied that the best method of treatment has been devised. I believe that much of the misunderstanding that has taken place is due to the difference in the appreciation, or at least in the meaning, of the words diffuse or general septic peritonitis. I have seen different statements from equally honest men, equally able men, bearing on the proposition of the rate of recovery in the treatment of general septic peritonitis—I prefer to use that expression—and I have marked so much difference in them that I am certain it is due probably to two causes, first a difference in the standing and the extent, and finally, as has been so ably stated here, the difference in the vulnerability of the patient. I believe that so far as septic diseases are concerned they may be classed along with those malignant diseases, it depending not a little on the kind of soil in which the disease processes are acting. This you will recognize at once, Mr. President, is somewhat diffuse, but when twenty-five men, more or less, men of equal reputation and renown, have made statements almost entirely adverse one to the other, you can easily see, I think, that as yet the matter is not settled, and some diffuseness of statement is justified. Now, so far as I am concerned myself that is a fair proposition. I remember very well indeed when in diffuse septic peritonitis—I want to strike that word out—general septic peritonitis, which I wish to be understood as meaning general in every sense of the term, arising no doubt from local causes, when free incision was made and an effort to wash out was attempted, I respectfully beg to submit that no person can flush the peritoneal cavity with the distension characteristic of the majority of the cases of general septic peritonitis. In the first place he will find himself very busy indeed keeping the intestines from escaping through ever such a

small opening as he may make; and when he attempts to wash it out the water strikes simply the surface of the intestines and returns. I regard it as an impossibility to wash out the cavity, and consequently I have ceased attempting to do it. Now I will assume that you could wash it out, because in some classes of cases it can be done, particularly in those that are not much distended—I mean wash it out not in the complete sense, but wash it out—I fully agree that the loss of time incident to that proposition, the exposure, and necessarily the depletion of the strength of the patient, makes it a very doubtful question if it is advisable to do it for the purpose gained, very. It has been my custom to give up washing out the peritoneal cavity for the reasons that have been stated here; but I do believe in draining the peritoneal cavity for the reasons that have been stated. First, it gives opportunity for the escape of infection, at least such as may be near at hand; second, it gives relief to the tension, affording opportunity for the peritoneal membrane to exercise its function. I believe, too, in leaving in the peritoneal cavity the serous fluid, and I think it should be recollected that when the serous fluid is left in the peritoneal cavity, of a healthy structure, that it is very rapidly absorbed indeed, and therefore it naturally follows, if it be good practice, it should be necessarily, under some form, renewed occasionally. The rapidity with which it is taken up is remarkable. Even the weight of the patient—the weight of the dog, at least—rapidly disappearing as the fluid was taken up, that is, proportionately to the amount of the fluid introduced it rapidly disappeared.

I want to say this further, and then I am done; I do not believe it is possible to have any rule of action, for any rule of action to be established in the treatment of any particular class of severe cases, so long as age, sex, environment and infection make up distinctive differences in them. I therefore believe that every case, as it comes up, should be treated according to its own peculiar self. I believe under these circumstances we should make reasoning agents of ourselves who will constantly advance and improve, and the statistics of the treatment of these cases will grow more and

more encouraging; while if we adopt a hard-and-fast method of treatment for certain forms of disease, or certain forms of infection—call it what you choose—we will make but comparatively little progress. I favor the Fowler method of treatment. I know Dr. Fowler well, and I have talked with him frequently in regard to it.

Now I have taken up your time, and I realize that I have done nothing more than express to you my earnest belief in what I have said. Many statements that have been made here I fully concur with. The general proposition I want to put before you is that I do not think it is wise to establish a hard-and-fast method of treatment for any disease where it is varied by so many circumstances and environments as characterize this class of affections.

The Chairman: I will call on Dr. Young to close the discussion.

Dr. J. S. Young, of Valparaiso: Mr. President, ladies and gentlemen, I certainly appreciate the thorough manner in which my paper has been discussed, and especially I wish to thank Dr. Bryant who has considered it worthy of his attention. At the same time I would like to call the doctor's attention incidentally to the fact that I was discussing acute diffuse suppurative peritonitis, and not necessarily a general septic peritonitis; for right there, as I pointed out in the paper, is the rock upon which we split; and when it comes to prognosis in these cases, a case may be acute and diffuse and suppurative and not be general; and it may be these things and not be septic, for as I understand, the term septic peritonitis, as some writers at least describe it, refers to peritonitis accompanied by septicemia. Aside from this I believe that most of the discussion that has taken place here has been in the line of what I have said, and for that I am glad.

I always like to see some difference of opinion, as it has been brought out here. I think it makes for the advancement of the profession to have the two sides discussed always. There are one or two points that have been touched upon in the discussion that I will reply to briefly, and then I am through.

The first is as to the results. We have such men as Dr. Deaver reporting a large number of cases, as Dr. Eastman has called attention to, something like twenty cases he reported last year at Atlantic City without a death. Dr. Murphy at the present time has had twenty-four cases with only one death. Dr. Murphy insists that these cases were diffuse, and he says "general peritonitis." That brings up again the question of definition. But he calls them general peritonitis. They are due to many causes. Many of them were perforations of the stomach, gall-bladder, intestines and appendix, as well as to other causes which I did not have time to discuss in a paper of this length. The element of tympanites was treated of by only two of those who answered my questions, and in briefing these replies I omitted to mention that two of those who replied to my questions advocated the opening of the intestines and relieving the tympanites. I think that is a questionable proceeding, for the reason that where we have it to that extent it is usually due to paresis, and it usually returns if you do open the intestine. However, it is practiced by good men. The element of drainage is varied to suit the individual cases.

I thank you gentlemen.

CANCER OF THE LARYNX, WITH REPORT OF CASES.

BY DR. L. F. PAGE, OF INDIANAPOLIS, IND.

History.—As to the nature and specific cause of cancer little is yet known. At present a widespread effort is being put forth to investigate the cause and nature of this formidable affection, and from the vast amount of intelligent investigation which is going on in different countries we may soon hope for results. The illness and death of the Emperor Frederick of Germany gave a sudden and universal impetus toward the study and a better understanding of cancer of the larynx. Immediately following this notable case were published the researches of Prof. Frankel of Berlin, the collective investigations by Semon of London, and many other remarkable papers and report of operative work. We are perhaps more indebted to Krishaber, of Paris, than any other for his previous study in the anatomy and pathology of this region. His classification of malignant disease of the larynx under the two heads, intrinsic and extrinsic cancer, marked a distinct era in the progress of the study and operative work on this organ. The region of the larynx comprised under the intrinsic division are the ventricular bands, the vocal cords, and the subglottic areas, while under the extrinsic may be included the epiglottis, the arytenoids, and the aryepiglottic folds. This classification is based upon the glandular supply. Operation on the extrinsic form of carcinoma is rarely successful, owing to the rich glandular supply of this region and the metasteses which result, and recurrence, which is almost certain. In the intrinsic form the outlook is far more promising, owing to the sparse glandular supply.

Diagnosis.—Butlin in an introductory paper on the early radical treatment of laryngeal cancer states the situation as we all find it in regard to diagnosis. He says that we must admit there are three classes of cases; the first, in which anyone and every-

one can make the diagnosis; the second, in which the better instructed or more experienced make it, and others do not; and the third class, in which the conditions are so obscure that no one can make the diagnosis until the larynx is opened, and in some of which it is even then difficult to be sure of the nature of the disease.

The value of an early diagnosis in this affection can not be overestimated. There are no groupings of symptoms, nor any laryngoscopic appearances, nor any microscopic findings which always point unmistakably to malignancy. Symptoms are often very suggestive; the trained eye in recognizing first laryngoscopic appearances counts for much, and the microscope is an invaluable aid, yet we should not exclude any one of these. McKenzie would reject the microscope entirely as being "misleading and inconclusive" and condemns the removal of fragments of the growth for this purpose. He says that it subjects the patient to dangers of autoinfection at the point of incision and to metasteses elsewhere, and that it stimulates the local growth of the cancer.

McKenzie it would seem is almost alone in this view. The majority of operators regard the microscope as a valuable aid to diagnosis, but not to be relied upon exclusively. The laryngoscopic appearance of the tumor, including its contour, its location, its surroundings, its color, the mobility of the vocal cords, the age of the patient, the character and location of the pain, with other subjective symptoms, aid the experienced eye in making the diagnosis; yet none of these are infallible signs. We are to differentiate from inflammatory diseases, benign tumors, pachydermia laryngis, syphilis, tubercle, lupus, laryngeal paralysis, and perichondritis. Syphilis and tuberculosis are the most confusing and most frequent to be considered, as either may be associated in the same case. Even where syphilis is not suspected a course of the iodides should be administered before resorting to operation.

Malignant disease of the larynx usually presents itself in two forms—sarcoma and carcinoma; the latter being infinitely more common. Sarcoma may arise from any part of the larynx, but is usually of the intrinsic variety. The tumor takes different forms

and is sessile rather than pendiculated and grows slowly. Metastases are uncommon. Death usually takes place in this form in from one to four years, and is usually due to suffocation and exhaustion.

Intrinsic carcinoma usually appears as a warty growth. Ulceration takes place early with rapid infiltration of the subjacent tissues. The lymphatic glands become involved late with little tendency to secondary involvment of other organs. The extrinsic form of carcinoma is a much more formidable disease. It rapidly spreads to the tongue, tonsil, pharynx, palate, and the neighboring lymphatic glands. The duration of life is usually short.

Cancer of the larynx is far more common among men than women, and is essentially a disease of mature age. The great majority of cases occur between 50 and 60.

Treatment.—Drugs have proved of little value in the cure of laryngeal cancer. The antitoxin treatment has thus far been a failure. Ligation of the carotids by Dawbarn's method has not been curative but has in a number of cases retarded the progress of the growth. While the X-ray has not fulfilled our expectations, it has proved of decided value in alleviating some of the worst symptoms, and the disease in many cases has been materially checked. No reports on the successful application of radium to the larynx have been found.

It seems that no specific for cancer of the larynx has yet been discovered, and, as Delevan says, in the present state of our knowledge the only hope for a cure lies in early radical operation. The endolaryngeal removal of malignant growths is today universally condemned. This method only hastens the end. Of the extralaryngeal operations early thyrotomy has the preference among the English surgeons, while among the Germans partial or total extirpation seems to be generally preferred. The American surgeons are divided.

The mortality before 1881 for 41 total laryngectomies was 60 per cent.; that for 10 partial laryngectomies was 40 per cent.—average 50 per cent. In recent years Glick, who has the most successful record, has a mortality of only 8½ per cent.

The operation selected should depend on the extent of involvment. Butlin and Semon have conclusively demonstrated that thyrotomy with removal of the diseased soft parts is the operation to be preferred in the early stages of the disease. In the more advanced cases hemilaryngectomy or total extirpation affords the only hope. When the natural air passage can be preserved, even with slight stricture, it is greatly to be preferred to the miserable condition which follows total extirpation.

Case I. William Long, age 72, a plasterer, was first examined September 5, 1903. Had always had excellent health until he lost his voice from a cold during the previous spring. Had used tobacco constantly and alcohol occasionally. Nothing in the old man's appearance indicated dissipation. The hoarseness had been persistent and ocasionally a little blood came from his throat. The only pain that had annoyed him was in the left ear. There was no history of syphilis or tuberculosis. Laryngoscopic examination showed a growth rather larger than a bean in the anterior commissure of the vocal cords apparently springing from the under surface of the left cord. There was considerable infiltration about the left cord. The surface of the tumor was irregular and nodular, very hard and light in color, and the cord perfectly immobile. A saturated solution of the iodides was prescribed and he was kept on large doses until it was found that they did not retard the growth of the tumor in the least.

By the first of the following February—five months—the growth had increased to such an extent and breathing was so labored that death from suffocation was evidently near at hand. The case afforded almost every clinical evidence of cancer. A radical operation was performed at the City Hospital on February 5th, in which the left half of the larynx was removed complete. The patient was placed in the Trendelenberg-Rose position and chloroform administered. The first incision extended from the hyoid bone to the sternum and the tissues were dissected and pressed aside exposing the laryngeal and tracheal cartilages. A low tracheotomy was done and the ordinary large canula was introduced and secured with tapes. The chloroform was then adminis-

tered through a rubber tube connected with chloroform apparatus and the canula. The thyroid cartilage was then split (with difficulty, however, owing to complete ossification) in the median line with bone forceps and the larynx laid wide open and examined with strong headlight. The interior of the larynx was then cocainized. The disease was found to be confined to the left half. The left half of the thyroid and cricoid cartilages were then removed by freezing the surrounding tissues and pressing aside the perichondrium. Great care was required in separating the laryngeal tissues from the esophagus. Several strips of iodoform gauze were placed in the laryngeal cavity and brought out through the lower part of the wound and secured. The upper part of the wound was closed and the dressings placed.

The subsequent treatment required very close and careful attention. The tracheal tube was kept in two days. The inner tube was removed every few hours and cleansed. It was several days before fluids or solids could be swallowed without passing out the wound. Gelatinous or semisolid foods were swallowed more easily. This old gentleman made a good recovery and was exhibited at the State Society last year, being the oldest reported case in which a laryngectomy has been performed. He is now working at his trade.

Case II.—J. S. Farrell, age 52, contractor. Had excellent tenor voice and often sang in choirs. Used tobacco excessively and at one period of his life used alcohol. Father, a soldier, died of dysentery during the war, at the age of 40, mother died at 65 from an accidental fall. Family of six brothers and sisters all living and healthy. No history of malignant disease or syphilis. Patient is an excellent specimen of manhood and has always enjoyed good health with the exception of chronic bronchitis. A persistent hoarseness began last spring (1904), with an attack of laryngitis, which lasted several weeks. When the inflammation and swelling cleared up a small papillomatous-looking growth appeared growing from below the vocal cords in the anterior commissure. During the months of May and June applications of argyrol were made to the larynx and a saturated solution of the iodides administered

internally. The progress of the growth was closely watched until about the first of July, when sections were removed at two different times and turned over to Dr. White for microscopic examination. Each specimen was reported to be unmistakably carcinomatous, as the clinical appearance had indicated.

After these examinations the patient took several weeks' rest in the woods of Wisconsin. When he returned I advised an immediate and radical operation, and at that time a thyrotomy would have been, in my opinion, quite sufficient. After this advice (September 1st), the patient was not seen again until the 20th of December, when he called at my office with his wife and said that he was ready to have the radical operation if I thought best. In the meantime he said he had consulted a well-known specialist in Chicago, who assured him that the tumor was not malignant, only a large papilloma. He removed it internally, cureting the surface. This was followed by local treatment for a few days, and then he was permitted to return home. He again visited the doctor two or three weeks later, who found to his surprise that the growth had returned with the old symptoms. At this visit sections were removed and sent to Prof. Hektoen for examination. His report is as follows: "The specimen which you sent me is a flat celled carcinoma." The patient was then advised to undergo a radical operation and referred to a surgeon in that city.

After giving me this history, an examination of the larynx was made and it was found that the disease had made rapid progress, but was yet confined to the left half of the larynx. After explaining to the patient and his family his chances for recovery, they decided on the operation at once, which was performed at the Deaconess Hospital on the 26th of last December; Dr. Burckhardt administering the chloroform, and Drs. Oliver and White assisting. The teeth were put in as near perfect condition as possible, the upper respiratory tract was put in as near an antiseptic condition as possible by the use of the antiseptic washes, and the trachea had been prepared by intratracheal injections of antiseptic oils. The different steps in the operation were about the same as in Case I. More extensive removal, including a part of the right thyroid cartilage and vocal cord, in addition to the entire lower left half

of the larynx, was found necessary. In separating the cartilages from the esophagus, the esophageal tube was found to be of decided help.

In the after treatment of this case there were a number of complications. The old bronchitis was troublesome; the feeding had to be watched. A very rapid pulse and disturbed respiration, due to interference of function of the pneumogastric nerve were corrected with digitalis and strychnia. Since the wound healed the X-ray has been used with apparent good effects by Dr. Wynne. Nearly six months have elapsed since the operation and the laryngeal cavity looks exceedingly healthy. However, this is too early to predict the final result.

DISCUSSION.

The Chairman: Dr. K. K. Wheelock, of Fort Wayne, was to present a paper entitled "Operative Treatment of Laryngeal Tuberculosis," but the doctor is not here. Neither of the doctors who were to discuss these papers are present, so Dr. Page's paper is open for general discussion. Does any one wish to discuss Dr. Page's paper?

Dr. John J. Kyle, of Indianapolis: Mr. President, the doctor has given us a very excellent resumé of the up-to-date literature of malignant disease of the larynx. He has pointed out particularly the cases which are amenable to operative treatment, those especially of intrinsic origin. There is one symptom also that the doctor brought out in the report of his two cases, and that was the slight hemorrhage which followed the hoarseness. I have one case of an elderly man under observation at the present time, and this was one of the conspicuous symptoms that followed the constant hoarseness, the very mild hemorrhage. They thought that he had tuberculosis, and had sent the man to Asheville. While there he benefited slightly and returned a month or six weeks ago, and is now under observation. He shows all the clinical symptoms of carcinoma. We have another case under observation of sarcoma, which Dr. Page has seen, a case that was referred to me by Dr. Morrison just before his departure for Europe. This was primarily a sarcoma of the orbit. At the present time we have

all the clinical symptoms of the secondary involvement of the larynx, just below the vocal cords. The larynx is gradually closing up, and it is only a question of a short time when the woman will have to succumb to strangulation, as it were. I am very much interested in these cases because I have seen them and know the excellent results that Dr. Page has accomplished. It is intensely interesting to know that we can cure cases of cancer when we get them in time, and we should be on the anxious seat wherever we have a case of chronic hoarseness without any other symptoms. If we have a case of hoarseness it is usually one of three things; it may be chronic laryngitis, but more often primary or secondary tubercular infection, or some malignant condition; and I was greatly in hopes Dr. Wheelock would be here with his paper so he might bring out the surgical treatment of tubercular conditions of the lungs.

Dr. George L. Keiper, of Lafayette: Mr. President, it seems too bad that when a paper of this kind is called for reading there is a general exodus of the general practitioner. I don't know whether it is due to the fact that when the general practitioner reads the specialists get out or not. The doctor said in his paper that this concerned a rather limited number of people, a limited number of people specially interested in this subject. It really ought to concern every one in the practice of medicine, and I would put in a plea for the use of the laryngoscope, which is an easy thing for any one to learn, and especially as this valuable invention was not given to us by a physician but by a music teacher.

The doctor has emphasized the intrinsic and extrinsic form of laryngeal cancer as to the prognosis of the case. The distinction is a valuable one. If you have the extrinsic form you can see it early, and the prospects for operation are good; at least if we can see the extrinsic form early enough the prognosis for radical operation ought to be rather good. The only trouble is we are liable to see the case when it has progressed so far that something in the nature of a very radical operation is necessary. The doctor is to be congratulated upon his results, and also the patient.

Dr. G. V. Woollen, of Indianapolis: Mr. President, when I came from Europe in 1886 I came fully prepared to do a great deal of this work. It has been one of the greatest disappointments that has occurred to me in eighteen or twenty years—in one respect a disappointment, and in another not—that I have seen so little, that we have had so little of it in Indianapolis. These probably are the only two cases of intrinsic trouble. Our attention has been called to the discrimination between the intrinsic and the extrinsic. The extrinsic form of trouble is not infrequent, and is one of the things that make us feel tired of life, oftentimes, because it is uncontrollable. I have had all I want of that kind. I hope I may never see another one. Contrary to what has been intimated here, that the extrinsic may be seen, I think the extrinsic may not be seen. Ordinarily, I think it is the reverse. I am speaking more particularly with reference to my experience abroad, as I will show you in a minute. I have been enabled to discover the extrinsic form of trouble in the larynx and throat repeatedly without any disappointment, and often enough to my entire satisfaction. It is in the intrinsic cases that the trouble comes, as has already been said. Attention has already been called to the difficulty of making the differential diagnosis even when you see, as it has been said that you can see, when you see that you have trouble in the larynx. The trouble is what that is. I think McKenzie has made a good point. I sympathize with what John A. McKenzie says in the tirade that he has made against clipping and disturbing all these growths, these intrinsic growths, because of the danger of general infection; and I haven't had that sin laid against me very much. I have been cheated, though, time and again out of an experience such as Dr. Page has had here, by taking advantage of just what he calls attention to. These extrinsic growths are slow in development, and they give you time. One does not need to be hysterical, or to be in a very great hurry. They are slow, and so you can take plenty of time for a differential diagnosis, and to test the treatment, which I have done; but as I said I have been cheated out of the experience, whether it be desirable or not. It was desirable in Dr. Page's case because he

has given us a hundred per cent. of recovery. But by waiting and taking time to determine the character of the laryngeal trouble I have found that I had either syphilis, a benign growth or tuberculosis; so that I have not had occasion to resort to what the doctor has done in these two cases; and so the only thing that I want to do, the only impression I care to make, is to impress upon you the importance of discriminating very carefully in these cases.

I sympathize with what Dr. Keiper has said that the doctors make a mistake when they flee from the specialists. The specialists are assistants to the general practitioner. When we are in our proper sphere we are simply assistants of the general practitioner; and the general practitioner needs us a great deal more than we need the general practitioner, and I am not immodest in saying that, having been a general practitioner myself for twenty-three years before I went into special work; and I feel that I am in a position to realize that; and it has been my desire, in my own special line of work, to be of assistance to the general practitioner, some of whom are here and have been helped by my assistance. And so I say it is very unwise for general practitioners to flee from specialists as they have done here this morning; and the impression I want to make now is for all of us, specialists and general practitioners, too, to discriminate very carefully in these cases, and don't be in too big a hurry. When you have a case well developed, as these two cases were, do just exactly as the doctor says, don't temporize. I think the diagnosis can be made, if you take time enough, without the microscope. The microscope has been to me a disappointment, very disappointing. I am on record now in the Indiana Medical Journal of having cured four cases of cancer of the nose. I never cured them. I didn't have them. The microscope misled me, mislead us. The subsequent history of those cases, in all those cases, confirms me in the opinion that I didn't have malignant disease of the nose; so we have not yet arrived at the period, at least from my standpoint, that we can rely on the microscope as implicitly as we would like to. As a clinician, I was bred a clinician and possibly I am really more on that than I ought to be, but it does seem to me we may take time enough in these cases, ordinarily, to make the diagnosis without

the use of the microscope. Dr. Dodds smiles. He is keen with the microscope, and with bacteriological work, and he has helped me, and I will call on him again doubtless; but what I mean to say is that we want to be a little careful in plunging around in the larynx too much to make a diagnosis. Let time help us.

Dr. Wm. T. S. Dodds, of Indianapolis: Mr. President, that is a direct attack. Dr. Cook said it was not the gun, but the man behind the gun that did the damage. That may be true of the microscope. The trouble is with some of us we do not know exactly what is required. For instance, a doctor from the northern part of the State brought a pan of milk down to me and wanted to know what was in it. "How soon do you want to know, doctor?" I asked. "I am going back on this afternoon's train; want to know by that time," he replied. I said, "I am sorry; you will have to hunt another bacteriologist." The trouble is we don't know why you send the specimen to the histopathologist. Don't pick out the center or top of an ulcer and expect a differentiation. You can not get it in that case. I simply refuse to make a finding. If you can find a little bit of the disease on some of the healthy tissue, then you can expect to get a diagnosis. Remember that histologists must find the tissue, must have some of the tissue from which the cancer springs, or the disease springs, and then he can give you an idea; but to take diseased, chaotic cells, which have no relation to the histology of the membrane or the tissue from which these growths spring and give the microscopist no idea, and it is simply a chaotic mass of cells without any association to the structure, he can not do anything. He must have healthy tissue to enable him to make a finding; and that is probably the reason Dr. Woollen recorded having four cases of cancer of the nose.

Dr. Joseph D. Bryant, of New York: Mr. President, there are many features in this paper and in this subject that appeal to the general practitioner, particularly of surgical interest. I want to say at the outset that I see no reason why early diagnosis should not be made in these cases, the same as in other situations in the

body. I want to say also that I believe that the microscope should verify always the opinion of the surgeon or physician based on his own observation. I want to say, at the same time, that I believe that in a large majority of cases, to one who has experience in observing these things, perhaps the eye or the touch may be quite as reliable as the microscope. I wish to illustrate distinctly what the gentleman who has just preceded me spoke of, the importance of the point of derivation of the specimen to be examined. I think myself that if the specimen be taken by the average surgeon, or possibly by any surgeon without directions from the microscopist, he may not perhaps get the specimen that permits of a satisfactory examination. To illustrate: Some five years ago a case of the throat and somewhat of the larynx was referred to me for diagnosis and treatment—I will not name the disease as it came to me except to say it was malignant; at least, the physician who brought it himself said he thought it was. I asked him if previous examinations had been made of the growth, and he said yes, and mentioned the microscopists who had examined it and pronounced it in every instance nonmalignant. I was satisfied from the looks of it that it was malignant; but I called the microscopist on the telephone, and I said you have examined, haven't you, repeated specimens from this case, this disease? He said he had. I said, "What is your recollection of the nature of it?" He said nonmalignant. I said, "I will tell you what I will do with you; I will bring the patient to your laboratory, and I will allow you yourself to cut the specimen from the growth, and then we will wait and see what you have to say; because I regard it as malignant." I took the patient to him, and he removed the piece himself as he saw fit, and in the course of the requisite amount of time he returned to me the fact that the disease was malignant; I know it, he said, because of the relation the diseased tissue bears to the healthy tissue. I am very glad the point was made by the gentleman, because I wish to say that I think when possible, at least when convenient, the microscopist should have the opportunity of making his own selection, and then no question can arise as in the three or four cases which may be wrongfully recorded.

Now, personally, I haven't removed the larynx. I, personally, have been asked to remove the larynx more than once, but have declined. I have performed thyrotomy several times for the purpose of reaching growths in the larynx. I want to say that I regard laryngectomy for intrinsic diseases as an operation not to be encouraged for two reasons: First, it never gets to one in the proper time; and, second, I do believe that thyrotomy, early diagnosed, should be done. I believe it should be promptly done. I believe the diagnosis should be promptly and early made. I do not believe that cutting away a portion of the questionable growth in the larynx necessarily causes general infection, not in the sense certainly of sepsis, nor do I believe in the sense of extension and disturbing; if in such cases the malignancy is hastened, asume that it is hastened, we have then at our command the means of diagnosis which promptly hastens action, and in that way relieves the patient and the surgeon from responsibility. In other words, I believe that thyrotomy done promptly as the result of equally prompt diagnosis, resulting in the removal of the diseased tissue, is just as important in disease of the larnyx and certainly of greater avail than it is of the soft tissues of the body, outside of the cartilaginous environment that characterizes these growths; and I want to say another thing. I agree fully with the statements of the gentleman that when the general practitioners leave when we are considering a question like disease of the larynx they make a great mistake; because it may give them wisdom which will cause them to sooner realize the presence of disease in their patients' larynges as signals of importance. I believe, as was said, that each should work with the other, and work promptly, and not with the exclusion of the specialist, but along with the specialist. The general practitioner should consider sarcoma, even though it was one which had heretofore given way repeatedly, which in this instance involved the patient in great distress, a calamity. I can see no other course by which the rate of mortality, down to eight per cent., can be much bettered except by honest, earnest, early and prompt co-operation between the general practitioner and the specialist.

GONORRHEA IN WOMEN.

BY A. S. JAEGER, M. D., OF INDIANAPOLIS, IND.

It is with great temerity that the writer approaches this subject, appreciating full well his own limitations and the vastness and importance of the condition to be considered, both from a medical and sociological standpoint. It is a subject indeed worthy of one's best efforts, and he trusts you will bear with him while in a limited way it is presented to you for consideration.

It is surprising that a condition such as this, conducive as it is, not alone in its immediate but also in its remote results, to so many of the serious and at times fatal derangements of the female genitourinary tract, pernicious in its effects both physically and psychologically, should receive such superficial treatment in the American text-books of the present day. Of numerous books on gyneacology referred to, while all of them mention in a general way gonorrhea as an etiological factor, only few give more than scant space to the subject of acute gonorrhea and its proper treatment.

Let us consider for a few moments the frequency of this disease as a causative agent in female troubles. McNaughton-Jones, quoting Alexander Foulerton, states: "He collected the statistic results in 459 cases of salpinitis and found the gonococcus had been identified in 85 cases, or about 19 per cent. In about 60 per cent. no micro-organism of any kind had been identified in the contents of the tube. He accounted for the absence of the micro-organism in so large a percentage of cases by the fact that many of them did not come under observation until such a late time in the duration of the affection that the causative bacteria had died out from some cause, after starting the pathological process. Many cases of pyosalpinx owed the presence of certain bacteria to secondary infection from some other cause than the specific inflam-

mation in the tube. The gonococcus taking only such cases in which the cause could be proven by pathological research, was present as the causative parasite, in little more than half such. In 489 cases in which the vulvar discharges were examined, the gonococcus was found in 323, or about 66 per cent."

Schwartz, Steinschneider, Pozzi, Bumm, Wertheim and others have shown us by their investigations the prominence of the gonococcus in the pathogenesis of gyneacological affections. Witte, in statistics gathered from 1,000 cases in A. Martin's clinic, found 288 in which this germ was found to be the pathological factor. Naeggerath considers gonorrheal infections as the most frequent cause of tubal inflammation, but he may be somewhat pessimistic, as, according to White and Martin, he also believes that 80 per cent. of all females are afflicted with latent gonorrhea. Schmitt and Herman consider the gonococcus as the factor in 20 per cent. of all cases of salpingooorphoritis. Sanger believes this germ to be the underlying cause in 12 per cent. of all female affections.

Considering the high percentage given by Naeggerath and the low one of Sanger, in conjunction with those of other close observers, ranging from 20 to 66 per cent., and even higher, we can safely state that approximately 15 to 25 per cent. is a very conservative estimation of the frequency of the gonorrheal microorganism as an active agent in the pathogenesis of diseases of women.

It will perhaps be impossible to prove to some that 25 per cent. of all female diseases are the result of specific infection. The writer believes that if 25 per cent. of all gyneacological conditions are not primarily due to gonorrheal infection per se, they are, however, the result of such infection in the male; the specific poison possibly altering the secretions and excretions of the male genital tract to such an extent as to render them, when brought in contact with the female genitalia, sufficiently pathologic to cause serious deterioration of the normal disease-resisting power of the cells; not always producing a gonorrhea, but weakening the various tissues so as to make it any easy matter for some other disease to take hold and thrive. Should this line of reasoning be

correct, we can not help but agree that the gonococcus is the fundamental cause of the given disease. I freely admit that I can not find any authority who advances this hypothesis, and submit it for consideration, as a possible step in the right direction toward the proper classification of the many perplexing cases which are seen, clinically bearing the stamp of gonorrhea, but microscopically giving negative findings.

Acton (on Prostitution, etc.), estimates that there is one unchaste to every twelve chaste women in the community at large, and Corry (Lyon's Medicale, January, 1894) found that about one out of three prostitutes was gonorrheac. This estimate is verified by the statistics of various European cities, where strict supervision of prostitutes exists. Still, with all this, we find that the percentage of chaste women whose ailment can be traced to this cause, hovers dangerously near the 25 per cent. mark.

Truly, this condition of affairs is appalling. If we but stop to consider the enormous amount of money and energy expended yearly in America alone, by both State and individuals, for the study of prevention and cure of tuberculosis, and for investigation into the causation and cure of malignant diseases, does it not seem strange that there has been no more concerted action to eradicate the evil of gonorrheal contagion?

This disease can not be classed with tuberculosis or cancer, but it would seem that a disease which is shown on conservative estimate to be the etiological factor in 15 to 25 per cent. at least of all female diseases, and in this modern life the vast majority of women are afflicted in some way; a disease which by its insidious manifestations, although not causing death as frequently as do tuberculosis or cancer, condemns many innocent women to lives of suffering or invalidism, should at least receive more serious consideration than has been given it by either State or the medical profession at large.

The following objections might here be raised: First, that the statistics which have been submitted, and many more along the same lines by equally eminent men, which have been omitted, count for little, as they are mostly the results of public hospital

work, the material for which is drawn from the lower strata of society; that the prevalence of the malady in a certain number of given cases depends largely on the class of patients handled. Second, that statistics are very accommodating, and may be juggled to fit the point one wishes to substantiate; and, third, that all these statistics and argument are those brought forward years ago, when our knowledge of gonorrheal pathology was still in its infancy, and through lack of courage or indolence the profession in general has allowed these erroneous ideas to prevail until the present time.

In answer to the above I have but this to say: First, I have brought forward only such authorities whose private work is equally as large as their public hospital work, and whose statistics have been based on the combined results of both private and public practice. Gonorrheal disease shows no favoritism; it knows no class distinction, and affects the rich as well as the poor, the intelligent as well as the ignorant. This can easily be verified by visiting the offices of genitourinary specialists in any of our centers of population, whose fees render their services prohibitive to the submerged tenth. Second, if we can not place dependence on the statistics of a majority of independent workers, whose reputations and experience place their statements above question, how can we ever expect to attain a true estimate of this or any other given disease? On the compilation of statistics taken from reliable sources must necessarily depend our estimate of the prevalence of any disease, and although one must freely admit that no statistics are infallible, still they must be treated with respect when presented by eminent authorities. Third, accepting the fact that all the figures and arguments presented are the same as those advanced years ago, the writer can not bring himself to believe that this is only so because the pioneers in this work have been blindly followed, but rather holds to the belief that these old views have in the main been found correct by the more modern investigators.

Now, how can this evil be remedied? All of us, I know, have given thought to this matter, and arrived at some conclusions; but

I do not consider myself a sufficient student of sociology to wish to express my views on this phase of the subject, except in a general way.

Municipal supervision of houses of ill-fame will not answer the purpose for the following reasons: Improbable as it may seem on first thought, the public house of prostitution is not where most males become inoculated. The professional harlot knows full well that a disease of this kind lessens her wage-earning capacity, and accordingly uses the proper hygienic precautions in most instances to prevent infection. The continual douching to which these women subject themselves, both before and after intercourse, effectually clears the vagina of discharges, and thus lessens liability to infection. The writer does not take the position that infection from this source does not frequently occur, but that, on the whole, it is a small factor in the dissemination of gonorrhea. Were the above statement not a fact, gonorrhea would naturally be a rarity in country districts, where there are no houses of prostitution, but experience has shown us that the disease is nearly as prevalent in such districts, in proportion to population, as in localities where such places do exist.

How, then, can we account for the enormous prevalence of gonorrhea? Let us consider this question squarely, without any equivocation. Unquestionably clandestine prostitution is the great channel through which the disease is disseminated. We all know that in every community, be it a large metropolis or a crossroad hamlet, there are a certain number of women who, at heart no better than the public prostitute, under the cloak of respectability indulge in their lewd practices, under circumstances, in many cases, which practically preclude any degree of personal cleanliness.

The foregoing may seem radical, but I would ask of those who do not agree with me to refer to their case books, and see if they do not have to treat at least three cases of gonorrhea in so-called respectable women to every one treated among bona fide prostitutes, and they will find the same proportion of sources of infection will hold good in their male cases.

All the laws of the past and present have not reached this phase of the social evil. If this problem can be solved at all, it must be solved, first, by parents bringing up their children to live in righteousness, mothers not alone instructing their daughters regarding the menstrual period, but going a step further, and teaching them the truth about the sexual act, impressing upon them the results, physically as well as morally, of illicit intercourse. Parents should also insist on a clean bill of health from the prospective husbands of their daughters. In the next place the family physician can aid to a great extent in the solution of this problem. Dr. S. Knopf, of New York, in one of his admirable articles on the prevention of tuberculosis, impresses upon the general practitioner his responsibility in properly instructing his patients; so should he also become impressed with the fact that in him we have one of the most potent instruments for the possible ultimate eradication of gonorrhea in the female.

The family physician should impress upon his patients not alone the necessity of personal cleanliness, but also the seriousness of gonorrheal infection, and I doubt not that many who are not at all swayed from wrongdoing by fear of God will be impressed when the gravity of gonorrheal disease is placed before them in the proper manner. Furthermore, the general practitioner should have a thorough knowledge of gonorrhea in all its phases in both male and female, the better to properly treat this disease, especially in its acute forms.

It is an easy matter to trace how virtuous women generally become infected. In a broad sense, among married women, improperly cured gonorrhea in the husbands, be it acute or latent, no matter in what part of the genital tract situated, is the great causative factor. The virtuous unmarried female may get this disease in some other legitimate way, as is seen in epidemics of gonococcus vaginitis, ophthalmia, etc., occurring in boarding schools and asylums, or by the use of infected clothes, etc., these same conditions in rare instances may cause the disease in married women, but as compared to the first cause, the latter dwindles into insignificance. We agree with Penrose that it is very un-

scientific to lay the responsibility upon previously infected husbands for every pelvic inflammatory condition which may appear in their wives. We all know of cases in which husbands have had repeated attacks of gonorrhea before marriage, and still, as far as is known, the wife is perfectly healthy. But, nevertheless, this source of contagion is so frequent that to it must be laid the most blame. It is not necessary to specially mention lowered resistance of tissue, for we well know this to be a predisposing factor here, as in other diseases.

The conditions which we may encounter as a result of gonorrheal invasion are either an acute or chronic form of urethritis, cystitis, ureteritis, pyolitis, and possibly other invasion of the kidney substance; folliculitis, vulvitis and vulvar abscess, inflammation of Bartholin's or Skene's glands, cervicitis, corporeal endometritis, metritis and perimetritis, periuterine phlegmon, salpingitis, pyosalpinx, ovaritis, vaginitis, peritonitis, bubo, sterility, various results of rectal infection, degenerations, cyst formation, abortion, ectopic pregnancy, etc.

The bare enumeration of these manifold pathological results of gonococcus invasion at once impress one with the gravity of the subject under discussion. It ill becomes one to arraign the noble profession, of which he knows himself to be so humble a member, but the writer feels so strongly on this matter that he can not forego saying that the profession as a whole has been extremely remiss in its duty. We point with pride to the glorious work which has been done by our profession in so greatly reducing the prevalence of cholera, yellow fever, diphtheria, smallpox and many other equally dread diseases; but can we look back with elation on our past work in reducing the frequency of gonorrhea? And still here is a disease which takes rank with the oldest, resulting from the same etiological factors as the others mentioned, namely, unsanitary conditions; notwithstanding which, there has been less accomplished in combating the steady and relentless progress of this disease than of any other. And this lack of accomplishment is, in the writer's opinion, solely the result of lack of concentrated effort on the part of the medical profession as a whole.

The sufferings of countless innocent women call us to arms, the still unborn mothers of our future citizens mutely appeal to us for relief from a condition which is equally a menace to the individual and the State, and although the author is not Utopian enough to believe that any of us here present will live to see the complete eradication of gonorrheal disease, that powerful rival of the great white plague, still there has lately been an awakening; we are at last beginning to appreciate the enormity of the ogre which has been slowly, but ever so surely, making its baneful impression felt on the very vitality of our social organization, and he can not help but feel that with greater community of thought and more concentration of effort, the solving of this problem will be a matter of comparatively short time.

DISCUSSION.

Dr. A. M. Hayden, of Evansville: Mr. President and gentlemen, the subject of gonorrhea in women is a broad subject to discuss. Of course, we have all forms of gonorrhea in women, and we find that all these cases are produced invariably by the presence of gonococci. However, you will find that the most severe cases we have to contend with are due to a mixed infection. Many cases of gonorrhea in women are overlooked entirely on account of the mildness of the symptoms, due to the fact that they are straight cases of gonorrhea produced by the gonococci without any other infection. Of course, we can not prevent the disease from spreading where we have infection, where there are chances to contract the disease, and it strikes me the most important thing to do is to try to eradicate the disease as early as possible after it is diagnosed. Many cases of gonorrheal pyosalpinx and salpingitis and gonorrheal endometritis are produced by the germs getting up there; and they can be prevented from getting up there by proper treatment in the acute stage of gonorrhea. Baum says seventy-five cases originate in the endometrium, before we have any trouble in the vagina or urethra. I believe we generally have it in the urethra and vulva. In those cases, if they are recognized early and properly treated, we can prevent, in many cases, the dire results that follow where it is allowed to proceed and

involve the fallopian tubes and the peritoneum, as well as the endometrium; and we all know what an intractable disease gonorrheal endometritis is. We know there is practically no cure for pyosalpinx, except in surgery. Go back and try to prevent the fallopian tubes being involved. I believe if those cases are recognized early and treated properly and thoroughly we can prevent many of the more serious complications. I believe if a woman was to come to me—in fact, I do when they come to me in this condition—the first thing is to thoroughly cleanse the parts, scrape them, shave them and use a strong solution of bichloride of mercury and thoroughly irrigate the parts every four or six hours, and keep the patient in bed, at rest, and do it thoroughly, with the hips elevated, so that you will fill up the vagina, and invade all the convolutions of the vagina. In those cases, if you will take the steps that I suggest in regard to douching every four hours with about a one to two thousand bichloride solution, you will soon destroy the gonococci. I have always been in the habit, after thoroughly douching the patient with the solution of bichloride, to use a tampon, and then at the next douching remove that and apply another tampon. It will produce serous discharge that has a tendency to wash out the gonococci and prevent them from crawling up and infecting the parts above. In many of those cases, if you will treat the case with antiseptic douches, you will prevent any serious complications. However, the urethral complications are not so easily gotten rid of. In those cases of gonorrheal urethritis that do not show a tendency to yield, I use a ten per cent. solution of argyrol, and wipe out the urethra once a day. I think the keynote in getting rid of gonorrhea is to diagnose it early and treat it antiseptically. Of course, a great many cases of gonorrheal pyosalpinx and gonorrheal salpingitis are brought about by a latent form of gonorrhea in the male that may never take on an active state in the female, although the parts may become affected from the latent gonorrhea in the female. I think many of the cases of gonorrhea in the female are overlooked entirely, and never come under the observation of the surgeon or physician at all, especially where you have the milder form of

a straight, simple infection of the gonococci; but a mixed infection, however, nearly always comes under the observation of the physician.

Dr. W. H. Link, of Indianapolis: Mr. President, gonorrhea is no respecter of persons.

"With equal pace, impartial fate
Knocks at the palace and the cottage gate."

The heart of woman has less to do with the dissemination of gonorrhea than the condition of the vagina, and if none but the guilty ever suffered from this disease we doctors need not worry ourselves so much about it; but the saddest picture, the saddest fact, is the suffering of the innocent, the wives of men who contract, not gonorrhea, but pelvic disease from that latent gonorrhea in an uncured husband; and it is our duty to disseminate information among not only the young, but the old men of the country that a man is not cured of gonorrhea because it has ceased to hurt him when he urinates, and that he is never cured as long as there is an untreated stricture, great or small, or as long as he has the morning drop, or has clap shreds in his urine at the close of urination. We must teach men to be cured before they are permitted to marry a clean, pure woman; and then gynecologists will have less business and the State will have less complaint to make in regard to race suicide, that seems to be so prevalent. The most intractable and incurable diseases of women are due to gonorrhea, either by direct infection or from a latent gonorrhea in a husband or a lover, for you may take peritonitis from any of the streptococci or staphylococci infection, and even from tuberculosis infection. Peritonitis may come on after an abortion, and the woman get well. Her pelvis may apparently be full of pus.

When you examine the pelvis you may find it bound by adhesions as tight to the wall as if it was nailed to a board, and the broad ligaments may feel like sole leather, and yet that condition under proper treatment and with a reasonable amount of time will clear up, and the woman will get well and afterwards bear children; but whenever that woman gets gonorrheal peritonitis, or gonorrheal salpingitis, or gonorrheal ovaritis, it becomes

chronic, and it is never cured until she gets relief from surgery, and often she is barren long before the surgical operation is brought about, which often leaves her barren, if she was not barren before. That, I find, is the difference between infection due to gonorrhea, latent or acute, and infection from other causes.

Now we want to get this idea abolished that gonorrhea is no worse than a bad cold. That, you know, is a very common expression among young men who have had no experience. Oftentimes it does not trouble a young man more than that, if he has a good physician to treat him; but he is not done with his gonorrhea when it ceases to burn him upon urination, or when it ceases to soil his clothing with discharges. He is not done with it any more than the woman is done with it when the same symptoms pass away in her. When old age begins to come on, then, while his stricture may have given him no trouble for a long time, then it begins. I think that the suffering of old men with the prostate gland, and with difficulty in urination, is often due to the stricture that may have lain dormant for thirty years, as far as symptoms are concerned. Then they find that having gonorrhea in youth is much worse, in old age, at least, than if they had taken a bad cold. We ought to disseminate the information in regard to the remote results of gonorrhea, and teach young men that the evil is not done with as soon as they can lay aside their syringes.

Now, as to the differentiation of the gonorrheal inflammation in women. It is oftentimes difficult from the mere symptoms to differentiate a vulvitis or vaginitis from other causes and that which arises from gonorrheal infection. There is one form of vaginitis which I have found very prevalent in clandestine prostitutes, if I may use that expression. It is not caused by the gonococcus. I don't know whether it is the streptococcus or not, but it sets up a profuse, virulent vaginitis, and the discharge is intensely acid; and the only way to differentiate it is to take some of the pus and examine it under the microscope. If you find the gonococci absent, it will be very easily cured by a few alkaline douches of borax, or some mild antiseptic; while if you find the gonococci in that discharge, you will find a very persistent chronic inflammation that will give you a great deal of trouble.

The Chairman: The American Medical Society, I believe, has appointed a committee to consider this subject, and that committee has made some reports. I believe I left some copies of the last report of that national committee in the hands of Dr. Wishard and the secretary. Dr. Jaeger, have you anything to say in closing the discussion?

Dr. A. S. Jaeger, of Indianapolis: Mr. President, I wish to thank the gentlemen for the kindly manner in which they have accepted my paper. I would like to remark, in speaking about the treatment of acute gonorrhea, when I appeared before the local society naturally in a paper of this kind I took up the treatment of all these various conditions, and it took so long they turned the lights out on me, and I have attempted to shorten the paper for this occasion. We do not see acute gonorrhea so much. The respectable woman does not know she has gonorrhea. She thinks she has an aggravated case of leucorrhea, and she lets it go on, lets it run until there is excoriations, etc.; and by that time the infection has traveled up into the cavity of the uterus. Then again this infection travels so rapidly that in two or three weeks we have a typical case of pyosalpinx. I had a case sent to me from Kokomo, and I had to operate upon her. Another case was the wife of a young man I treated four or five years ago for acute gonorrhea. He was one of these smart ones—that is, he thought as soon as the discharge was stopped he was cured. Two or three years afterwards he decided upon marriage. I took an interest in the young man; he was something more than a patient, he was a friend; and I went to him, and I said, "Are you thoroughly cured?" "Oh, yes," he replied, "I am all right." Don't you have any discharge at all?" I asked. "Oh, well, once in a while I have a drop, just a little drop of milky stuff; it goes away in a day or so, and that is the end of it." I begged him not to marry; I put it before him in the strongest terms I could; but he married a very estimable young lady, and they went off on the wedding trip. Four days afterwards they had to bring her home in a private car. I examined the cervix discharges, and there was the gonococci. I put it to him pretty plainly. The girl's mother and

father insisted on knowing what the trouble was. Of course, I did not tell them what the trouble was, but I told them I believed an operation was necessary, and they took me by the nape of the neck and threw me out of the case. Another surgeon was called in, and he made a similar diagnosis, and he was thrown out of the case and somebody else brought in. They removed the young lady to Cleveland, and the last I heard of her was the notice of a funeral. The parents simply could not believe that an operation was necessary, that it could be necessary, in a young girl only two or three weeks after marriage. It seemed to them impossible that it could be so.

As I say, we do not often have acute vaginitis. Of all the cases of gonorrhea in women, scarcely ten per cent. are vaginitis. Nature has taken care of that. We only have the primary acute vaginitis in women who have not been deflowered, or women recently deflowered; for after the vagina has been accustomed to coition the cells are able to resist infection. The only time we get vaginitis is when the discharges have developed in severity to such an extent that even the highest resistance has to give way. We have most acute gonorrhea in women in the urethra and in the cervix.

THE EYESIGHT OF SCHOOL CHILDREN AND THEIR FUNCTIONAL REFLEXES DUE TO EYESTRAIN.

BY WALTER N. SHARP, M. D., INDIANAPOLIS, IND.

This subject has been presented to the profession and the public many times by able men as a matter of education to those who have the care of children either in the home or in the school, and it may not be amiss to again present a few facts to further enhance the interest in the subject.

The proper care and treatment of a child's eyes influence, to a great degree, its general health and its future possibilities. Much depends, then, on a knowledge of this fact, and of some of the conditions requiring correction.

Many cases of refractive error become physical wrecks because of the reflex conditions brought to bear upon the nervous system through unconscious accommodation. Not infrequently, children are obliged to remain at home a day or two at regular intervals during the term, with severe headache, while during the vacation months, when they are romping in the open air and the eyes are relieved from near work, these headaches seldom or never occur. For lack of interest or ambition, many children leave school at adolescence, when, if the effort to see normally were relieved by proper refraction, there is no doubt that some of them would continue their studies with pleasure to themselves and honor to their citizenship.

There is no defect aside from mental incapacity which will hinder a child's progress in school so much as defective vision. It is illogical and unreasonable to lay the majority of ills to eyestrain, as some of the more radical men are doing; but there is not the slightest doubt that not a few serious functional and psychological disturbances are due to visual error or muscular imbalance.

According to our best authorities, hypermetropia is almost universal at birth—92.4 per cent.; up to the fifth year it is 84 per cent.; while among children in the elementary schools it is 76 per cent.; and with the pupils of the higher grades it is 56 per cent. In three hundred cases examined during the second year of life, the hypermetropia averaged 2 D. This shows that a perfectly normal eye at birth is an exception; but that with gradual development of the body in general, and the use of the ciliary muscle, the eye develops in proportion, until the percentage of hypermetropia is reduced to about 50 per cent.

By hypermetropia or farsightedness, we do not mean that a child can see farther than the normal eye, as is understood to be the case by many of the laity, and by some physicians, but if the error is not great, the child can see as well, and even so when the hypermetropia is of considerable degree.

Rays of light entering the eye should fall upon the retina. This they do in a normal eye, but in the case of a hypermetropic eye, which is shorter than the normal from before backward, the rays of light reach the retina before they focus; hence, in order to focus the rays sharply on the retina, a contraction of the ciliary muscle is necessary. The child realizes that, according to a natural law, objects brought near to the eye, apparently enlarge them, and as a child is only able to grasp one letter or a short word at a glance, it instinctively brings the book nearer to the eye to enlarge or make more distinct the letters or words looked at. This requires an extra accommodation, and if hypermetropia exists, coupled with the abnormal amount of accommodation required, and still a treble exertion, if the light and other conditions are not favorable, reacts disastrously upon the delicate nervous system.

Donders says that an error of less than a diopter is rarely disturbing to the vision; but the reverse of this is the case in my own experience, and in that of many of our best observers. Often a slight hypermetropia of a quarter to one diopter will cause greater reaction in a child of nervous temperament than a farsight of a much greater degree, because it is always corrected by strain from the time the child rises in the morning till it retires

at night, while a high hypermetrope does not see normally, and will not try to overcome his error. Again, the ciliary muscle is developed to such a degree as to compensate for the extra accommodation. Some children pass through school without any untoward symptoms, but later they usually require assistance much earlier in life than a simple presbyope—usually between the ages of twenty-five and thirty-five years. Some high hypermetropes have normal, or nearly normal vision, but in order to reach it their full energy is expended. They frown and squint and bend the head and shoulders forward in their effort to shorten the distance, without any reflex symptoms except these. I recently refracted a child of eight years who was brought to me by reason of these symptoms. The vision was .5, while under full paralysis of accommodation his vision was $^1/_{20}$, thereby accommodating from $^1/_{20}$ to $^{10}/_{20}$ vision. His error was 7 D.

It is during school life, then, that the eyes should receive attention in their development towards normal or abnormal conditions. By overstrain, by cramped conditions of light or position, and excessive use of the ciliary muscle, overdevelopment, by stretching the delicate plastic coats of the young organ, may ensue, and an acquired and progressive myopia may result. This is not as common among school children as might be supposed, however, as only under extreme conditions does the eye overdevelop. It is as natural for the eye to develop in childhood as for that of any other organ, and where there are no untoward symptoms it is not right to burden the child with glasses.

Headache in the child is not always caused by eyestrain or muscular imbalance. There are a hundred and one other causes which should be sought for by the family physician, but in the majority of cases where the functions of digestion and secretion are normal, eyestrain is at the bottom of the trouble and the physician should not fail to have the child's eyes properly refracted by a competent oculist, even if the vision is apparently normal and the refractive error slight; for what parent cares to have his child's progress hampered by physical ailments which hinder his application in school. A refractive error often begets weakness of one or more of the extrinsic muscles and squint or

cross-eye may ensue; but this not always the cause, as want of binocular fusion may be at fault and the child will be obliged to undergo a course of amblyoscopic exercise in order to acquire this undeveloped function. In consequence of this lack of binocular fusion one eye may turn out or in, as the case may be. This may alternate according to the fixation of either eye, but when by habit a child uses one eye only, the fellow eye only will squint and amblyopia will result from nonuse. Amblyopia is also not infrequently seen in children with high error, and it should be treated by full correction and exercise of the receptive nerve elements.

With these facts before us it is unwise to put off correcting a child's visual error when so much can be gained by early correction, and so much irreparable damage may result by delay.

I have mentioned hypermetropia and myopia only, taking for granted that astigmatism is considered, which may be hypermetropia or myopia in one meridian or another as the case may be.

It is difficult to understand how a child or adult overcomes astigmatic errors, but they do so in some way by ciliary action, and this unconscious and uneven action of the ciliary muscle is only manifest in many cases by the most trying reflex symptoms.

The writer is a victim of the refractive error known as mixed astigmatism, in which, in one meridian the error is myopic and in the opposite meridian it is hypermetropic.

Up to the age of thirty years his nervous reserve force balanced the exertion brought to bear upon the ciliary muscle, but at that period of life, following several severe attacks of grippe, and hard work as a general practitioner, his reserve force became exhausted and frequent attacks of headache and vomiting were experienced.

Since the correction of the refractive error, the above symptoms have fully subsided, and for the past seventeen years none of these symptoms has occurred, except what could be accounted for by other causes. It is often so with children in school life. They will go for years with a refractive error without experiencing any bad results, but if thrown off their balance by some slight or prolonged illness, reflex irritability becomes manifest.

I have seen children whose eye trouble dated from an attack of measles, whooping-cough or other ailment, when we know that these diseases could not have affected the eye—except a conjunctivitis which usually accompanies them—but the governor controlling their nerve force has been interfered with and consequent irritability from eyestrain followed. These conclusions were sustained by the presence of some degree of error, which, when corrected, relieved the trouble.

We are all familiar with the assertions of the more radical men, Drs. Stevens, Ranney and Gould, and the latter's Biographic Clinics, in which he attributes eyestrain as a cause of the many ills of De Quincy, Carlyle, Darwin and others.

As this is one great cause for such a variety of functional derangements and suffering, and as the subject is being more carefully studied, and clinical fact is bringing forth such weighty evidence, physicians will be forced to believe more fully that there is more truth than poetry in the assertions of these men, and that eyestrain is one of, if not the greatest factor in reflex functional neurosis.

Specialism is a grand thing in modern medicine, but there is the danger of near-sightedness of thought, if one has not a knowledge of the broad subject as a whole, and the eye specialist is not an exception. Because iron in sufficient doses is the remedy for an anemic blacksmith, it does not stand to reason that it is the remedy for all ills of all blacksmiths; but if the illness of every blacksmith is anemia, then iron is the remedy in each case.

When innumerable cases have been so completely relieved of reflex suffering by the correction of some refractive error, after they have been treated by the general practitioner and nerve specialist and operated upon by the abdominal surgeon without relief, then in these particular cases the correction of the eye trouble was the proper therapeusis.

What are some of the conditions said to be caused by eyestrain? Headache is one of the most common, either alone or complicated with nausea and vomiting.

The cases of simple headache are more numerous and the character of it is almost unmistakeable. In some cases, the pain

comes on during or after the use of the eyes. In others, the four o'clock headache is experienced, coming on in the middle of the afternoon when the eyes begin to tire and the reserve force is becoming exhausted. The morning headache is not infrequent, due to late reading or study. The headache may be supraorbital or the pain or discomfort may be confined to the globes, and pressure over the eyeballs may give temporary relief. It may be frontal or occipital or both, and may range from a dull ache to a sharp pain. It may be occasional or continuous. The eyes themselves may be congested and a conjunctivitis of a chronic nature may supervene. Blepharitis marginalis is with loss of lashes, chalazia, blephoraspasm, choreic action of the face muscles and squinting, car sickness with vertigo and distress in the stomach are common symptoms of eyestrain, and I have seen many cases relieved by a proper correction of the refractive error.

Some cases of scoliosis have been attributed to eyestrain as a causative factor. Parks speaks of it in the second volume of his "Surgery," and Dr. Kilburn of Boston read an interesting paper upon the subject before the Boston Society for Medical Improvement last December, when he reported several cases under his own observation. His claim is that astigmatism of an oblique axis might be a predisposing cause.

In 1903 Scholder of Lousanne published a paper in which he reported statistics of 2,314 school children of whom he found that 571 had lateral curvature. He also found that the amount of myopia varied in direct proportion to the degree of scoliosis. Dr. Kilburn advanced the idea that scoliosis might be caused by increasing myopia nine years before the publication of Scholder's paper. He makes the plea that in every case of marked tilting of the head to one side, or of increasing myopia or of diminishing hypermetropia, the spine should be examined, and that in every case of spinal curvature the refractive error should be carefully corrected.

Disturbed digestion may react upon the power of accommodation, as it does upon the ability for concentration, or upon the activity of the muscular system in general, but the reverse is

more often true. We all know, especially those who have practiced for twenty years or more and have been brought in contact with such cases, that dyspepsia has not infrequently been relieved by proper refraction. This could not have been simply a coincidence, for many such cases coming under my own observation had been treated for weeks or months and were not relieved until the eyes had been corrected.

The connection between menstruation in schoolgirls and eyestrain is not to be underrated. During the periods the function of accommodation is impaired, and more especially so if there exists a refractive error; and it is not improbable that excessive accommodation reflexly may produce irregular menstruation.

I believe I have mentioned most of the manifest reflex conditions caused either in part or in toto by eyestrain in school life, but these are two of the more common nervous affections in childhood, viz., chorea and epilepsy, which have been helped, and in some cases said to have been cured by the correction of the refractive error. None of such cases have come within my personal experience, however.

What are some of the conditions of the schoolroom and home which will help to alleviate these troubles and lessen unnecessary exertion of the ciliary muscle? These can be summed up in a few words. In the school, sufficient space for a given number of pupils in each room; proper ventilation; light of sufficient quality and volume and from the right direction to avoid shadows; properly tinted walls; print of the proper size and clearness; seats to suit the individual pupil, rather than grade; instruction as to position of body while reading and writing; the relief from too protracted accommodation; proper outdoor physical exercise.

In the home, the discontinuance of too long night study, the avoidance of reading trashy books of poor print, or too close confinement to fine needlework; electric, gas or kerosene light of good quality and even volume; nourishing and easily digestible food; well ventilated sleeping-rooms; in fact, the observance of the best hygienic conditions; and last but not least, the true correction of any existing latent or manifest refractive error.

DISCUSSION.

Dr. A. E. Bulson, Jr., of Ft. Wayne: This is certainly a very interesting subject and one that I think perhaps is given too little attention, for the reason that there seems to be a prevalent opinion that children are not subject to eye troubles so much as the adult. The doctor speaks particularly of headache in school children. Personally it has not been my experience to see headache as a marked manifestation of eyestrain in children. In fact it is probably 75 per cent. less manifest as a symptom of eyestrain than in the adult. I think all oculists will agree that one of the most prominent symptoms of eyestrain in the child is inflammation either of the ocular or palpebral conjunctiva, or both. Also, we see blepharitis of the margin of the lid which assumes the congestive or ulcerative form, depending upon the physical condition of the child. Children also complain of blurring, and in my experience this is one of the first things that attracts the attention of the parents to the child's eye. If there is simply redness of the eyes they are inclined to believe the blood is out of order, and in many instances the family physician falls into the same error and begins the administration of alteratives and tonics, which, while they may be indicated as part of the treatment, do not constitute all of the treatment that should be employed in order to give relief.

With reference to headaches, when they do occur, and they occasionally occur in children, it is my experience that they are prone to come on late in the afternoon after the school work has been largely completed. These headaches, if due, for instance, to hypermetropia alone, are either frontal or temporal, and an occipital headache I nearly always expect to find due to astimatism. The so-called morning headache I believe in a majority of instances to be due to some catarrhal disturbance in the upper respiratory tract. An eye headache pure and simple can nearly always be "slept off," as the patient will say, and it is removed by sleep simply because the overtaxed and irritated ciliary muscle obtains needed rest during the hours of slumber. As for the cure of chorea by the adjustment of glasses or the correction of

errors of refraction, I believe there are some cases practically cured. I have personally seen many cases in which the choreic manifestations were very markedly lessened by the correction of errors of refraction when by suitable medicinal treatment the same effect was not produced. In fact, when the glasses were left at home, for instance when attending school, choreic manifestations over and above the ordinary were developed, and disappeared as soon as the glasses were resumed.

I also wish to speak of the so-called latent errors the doctor calls attention to. I think this is a great bugbear on which the family physician often fails. If the little school child is able to read test type at 20 feet, which according to the generally accepted rule should be read at 20 feet, the parents and teachers and often the family physician are deluded with the idea that the eye is perfect; that there is not much trouble or the child could not read at that distance. Very frequently the parents, and possibly the family physician, also, do suspect an error and will refer them to the ordinary jeweler or optician. He uses the subjective test, and if the patient will not accept either a concave or a convex lens, the optician is likely to say "I find no difficulty." More frequently, though hypermetropic, they will admit seeing the letters a little more distinctly with the concave lens, and every oculist, I am sure, has had more than one experience with concave lenses when hypermetropia was the error. The reason is, the error is latent. That error may be very large, amounting to from three to four diopters, all of which are latent and none manifest. The correction of this error is absolutely demanded in order to give the child relief. I might say also that the manifestation of this error in blurred vision in reading comes about, perhaps, after many years of very comfortable use of the eye and is due entirely, perhaps, to deficient digestion or some other ailment like whooping-cough or measles, which for the time being has rendered the patient unwell.

Dr. F. C. Heath, of Indianapolis: Every well-informed and up-to-date practitioner certainly now recognizes the frequency of eyestrain as the cause of headache. There is a difference of opin-

ion as to its frequency and much difference as to its producing other reflex disturbances. Now it was not the oculist that first drew the attention of the profession to this question, but a neurologist—Dr. Weir Mitchell, of Philadelphia. Indeed, if you will read the text book of Dr. Osler and look for the etiology of that condition, excessive acidity of the stomach, you will find he mentions hypermetropia as one cause. If hypermetropia may cause such nervous disturbances of the stomach much more apt is astigmatism, which is a much more potent factor in the causation of eyestrain. You perhaps have read more or less in the literature of the writings of Dr. Gould, of Philadelphia, upon this subject. You may know he has taken what many consider very extreme ground. He has said that all or practically all of migraine is due to eyestrain. He has written a series of essays called "Biographical Clinics," in which he has gone into the symptoms of celebrated people like Carlyle, Huxley, Darwin, Spencer and others, and has attributed their symptoms to eyestrain. His conclusions have not been very generally received with favor. But, gentlemen, although I said a year ago that I thought he was an extremist, I wish to modify the statement then made. I believe he is somewhat overenthusiastic, but it is as a reformer. Every reformer is apt to be overenthusiastic and the rest of us follow far enough behind. He is enthusiastic, but enthusiastic in the right direction, and if not absolutely right he is very near it, and I say this as a correction of my statement last year because of this fact. When I spoke then I had seen these books and had read the unfavorable criticisms. I had read a few words in them, and had laid them down and joined in the general cry against them. Since then I have read the books very carefully, and I want to say now to any of you gentlemen who will read the "Biographical Clinics," you will concede that he makes a very strong argument for his side of the case. He endeavors to prove that the symptoms of ill-health of Carlyle, Mrs. Carlyle, Browning, George Eliot and others given in his book were due to eyestrain. I realize that my position is something like the man who, at a Democratic gathering, was trying to sell some pups. He said

they were fine Democratic pups. A short time afterward he tried to sell the same pups at a Republican gathering and said they were fine Republican pups. Some one said, "How is this; I thought they were Democratic pups?" The man said, "Yes, but they have got their eyes open now." Since reading the books I have got my eyes open and realize that I was somewhat in the wrong. And while I am not yet ready to go as far as Dr. Gould, especially on the subject of migraine, I believe he is taking advanced ground in the right direction, and I would be glad if the gentlemen present would make an investigation of their own and join in the movement, which I believe is in the right direction.

Dr. G. V. Woollen, of Indianapolis: I have for a long time hesitated to say what I am going to say. This seems to be an opportune time, and I make the observation for the benefit of the brethren interested along this line. It has seemed to me first that we have only half approached the subject when we say this eyestrain is due to hypermytrophia or astigmatism. It seems to me there must be some cause behind that. I have had numerous cases come to me, after the eyes had been supplied with glasses, to look after the nose, and I have frequently observed what I want to announce as to a great number of these cases, that after the ethmoidal diseases present has been controlled how many can lay their glasses away. Now that may teach something or it may not teach something, but that has been my observation, and many of you who give attention to the nose and eye both ought to have a chance to prove this better than I, but it has been an observation of my own for years.

Dr. W. N. Sharp, of Indianapolis: Of course we like to know what the text-books say on any subject, but after a man has had nearly a quarter of a century of actual experience he begins to believe some things that have come within his own field of observation. We can not look upon these things lightly, and we must have some faith in things that are actual facts, proven by experience. I have seen many cases of headache relieved by the proper correction of errors of refraction, and many other nervous dis-

turbances relieved, which I have cited in the paper. I think a man who has practiced a number of years should state facts that have come within his own experience, and not depend upon the experience of someone else even in the same field of work.

Dr. Bulson spoke of the four o'clock headache. I think this is particularly an eyestrain headache. It is found in children, bookkeepers and clerks, and I have seen many such cases relieved by correction of the refraction. I believe where the general practitioner has failed to relieve these headaches by other means that the eyes should certainly receive attention.

HEADACHE AS A SYMPTOM.

BY J. F. HICKS, M. D., OF ARCADIA, IND.

Headache is, of course, always a symptom and never a disease, and because of this fact a careful research should always be made to find the cause, and the causes of headache are numerous; but I can discuss only the more practical and important in this paper. It is of especial importance to examine with reference to rheumatism of the scalp, gastrointestinal disorders, ocular defects in its various forms, neurasthenia, hysteria, anemia and uterine conditions, the existence of nasal disease, particularly inflammation of the frontal and ethmoidal sinuses. These should be considered as the cause of functional headache. Less frequently, but far more important, from a diagnostic standpoint, is headache seen in persons suffering from renal disease, brain-tumor, brain-abscess and meningitis in its various forms. The causes, or some of the causes of this class are cranial periostitis, middle ear disease, syphilis, acute inflammation of the eye or in the jaw.

The most common cause of headache is probably disorder in the function of the digestive apparatus, which is accompanied by evidences of such disorder, consisting of gastric or intestinal distress, hiccoughing or vomiting, or even diarrhea. Often there is a distinct history of the ingestion of indigestible food, or digestion-disturbing drink, but in other cases exposure to cold so congests the abdominal viscera that catarrh of the stomach and bowels is induced, and with it congestion of the liver, followed by jaundice. The headache of disturbed digestion is nearly always frontal and of a pulsating character, and in many cases congestion to such an extent that the face is flushed, or at least the intracranial circulation is so disturbed that the patient is unable to lower the head because such a position increases the pain. Such cases are relieved by hot foot-baths, which relieve the congestion of the

head; nearly always by the act of vomiting, which should be induced if need be by an emetic. Vomiting makes such headaches very much worse for a time, owing to a congestion of the head following the efforts at vomiting, and this is an important point in the diagnosis, for in renal disease or some other states the vomiting is sometimes so easily performed that no straining ensues. Headache due to disorder of the digestion rarely ensues immediately after food is taken, since some time must elapse before the ingested material becomes changed into an irritating mass by fermentation or putrefaction processes. As a consequence, several hours or even a day may pass without any discomfort in the head, after which time the full force of the headache develops. The headaches of indigestion are characterized by two important facts, viz., that they are not constant, and, second, that they are often relieved or prevented bv a purgative, even if constiptions has not been present. Such headaches are very apt to be pulsating and accompanied by nausea. Sometimes such a headache takes a form called migraine or hemicrania, a condition in which the pain is chiefly, if not entirely, unilateral, and there is associated with the pain, early, more or less hemonopsia, or blindness.

Headaches resulting from digestive disturbance do not always depend entirely upon irritation of the stomach and bowels with reflex disturbance of the circulation and sensory nerves of the head, but upon the absorption of poisonous substances formed in the digestive tube. These poisons are usually formed only to be destroyed by the liver, or are developed in too small quantities to have any effect; but no sooner do congestion of the liver and deficient biliary secretion ensue than they are found in large amounts, and enter the general blood stream, owing to the absence of antiseptic bile and the coincident or consequent constipation. As a result we see very violent headache in jaundice due to catarrhal changes, particularly if the kidneys are not active in the elimination of toxic substances. In other cases in which no jaundice is present violent headaches, which utterly incapacitate the patient, come on from autointoxication.

Thus, a man apparently perfectly well goes to bed on a certain night and wakes in the morning feeling a little more drowsy than

usual. On rising he may feel a little stupid, and perhaps be slightly vertiginous, but is able to eat his breakfast as heartily as usual. In the course of a few hours the mental heaviness becomes more marked and a pain in the brow develops, which gradually gets worse, till it is unbearable. The ordinary remedies for neuralgic headache are futile, and he finds no relief until, by the use of a purgative, he removes the source of his intoxication, and the kidneys have time to eliminate the toxines already absorbed. Sometimes vomiting comes to his relief, and the emptying of the stomach so stimulates his liver and intestines by the efforts at vomiting that the process of autointoxication ceases. Some of the intestinal poisons have been isolated, and have been found to have a physiological action, like many well-known drugs. Thus one produces effects like those of digitalis, another like those of belladonna, and a third like those of aconite. Pulsating pain and a slow, full pulse may indicate the absorption of the digitalis-like poison; a flushed face and hot, dry skin, the belladonna-like toxin; and pallor, faintness and a feeble pulse, if no nausea is present, the presence of the aconite-like toxin.

Persons suffering from headache of this type are nearly always much freer from discomfort in the head after such an attack than for some time before.

EYESTRAIN.

Eyestrain is probably the second most frequent cause of headache, and it is usually due to abnormalities in the ocular muscles and errors in refraction. Some ophthalmologists contend that the external muscles are commonly at fault, while others contend that it is most often the interni. Such headaches may be felt in any part of the head, but are most commonly said to be in the occipital region. If in association with such headache, immediately after or long after reading, there is blurred vision, pain in the muscles of the eye in suddenly moving the eyeball, any tendency to congestion of the lids, or hyperemia in the conjunctiva over the insertion of the muscle, the diagnosis of headache from eyestrain is practically certain. Violent pain in the head may also be due to

irritable retina and to astygmatism and spasm of the ciliary muscle. Acute inflammatory processes in any part of the eye may produce severe headache, particularly iritis, the pain of which is very apt to be worse at night. Violent headache is often produced by acute or chronic glaucoma, and is usually felt about the eyes or orbit. Often it is of a unilateral character, and the sharp, shooting pain causes a false diagnosis to be made of neuralgia, or, in some cases, the patient is thought to be suffering from migraine, because in addition to unilateral pain there are often nausea, vomiting and pallor of the face.

The examination of the eye will show glaucoma to be present. Quite similar symptoms may occur from foreign body lodged in the cornea.

Nervous exhaustion or neurasthenia is probably the next most frequent cause of headache. Headache from this cause may be superficial or deep, is of a pressive character, often associated with some dizziness or vertigo, and is nearly always occipital in character, more rarely appearing over the brows, and sometimes as a band around the head. Such headache persists as long as one who is overworked persists in fatiguing himself, and rapidly disappears when rest is taken.

RHEUMATISM.

Headaches due to rheumatism are often quite severe and are associated with much tenderness of the scalp or muscles covering the skull. Similar headaches, but more dull in character, are also seen in persons suffering from phosphaturia, are relieved by benzoate of ammonia. Anemic headache is a sore and pressing pain, usually felt in the forehead and orbital region, or in the vertex, and is often associated with occipital pressure. As its name indicates, it is found in connection with the general and special forms of impoverished blood.

HYSTERIA.

The typical headache of hysteria is a pain as if a nail was being driven into the top of the head, and is rather rare. Headache from uterine disease is usually occipital, sharp and raditaing.

NASAL DISEASE.

Headaches from pressure of the turbinates is common, and may be either acute or chronic; acute from rapid swelling, or chronic from hypertrophy, or septal deviations, or, perhaps, from distension or inflammation of the accessory sinuses of the nose, and is felt as a pain beginning at the root of the nose and running directly backward to the occiput. It is greatly increased in severity by coughing or bending over.

We also have headaches from the infectious and febrile diseases produced by toxines, high temperature, etc. Headaches, also, from the different drugs, as the chloral habit, the administration of nitroglycerine, the salicylates, quinine, etc.

Leaving the headaches due to functional disturbances not associated with organic changes, I pass to those due to organic disease.

RENAL DISEASE.

Those due to renal disease are of two classes, in that they are an evidence of uremia, or they are congestive, and due to the high arterial tension so often seen as the result of chronic contracted kidney, with its associated conditions of cardiac hypertrophy and arteriosclerosis.

Uremic headache is often associated with nausea or vomiting of a persistent type, and sometimes with diarrhea, for purging is an effort at elimination. The pain is not of the shooting, darting or neuralgic type, but dull, even if severe, and is often associated with a sensation of fulness in the head. Sometimes the tendency to drowsiness is very marked, and even if the patient does not sleep, he may seem on the verge of sleep all the time. These uremic headaches may occur in any form of renal disease, either acute or chronic, which results in uremia; but if the cause be contracted kidney, there will be high arterial pressure, and often strongly beating heart. The pain in this variety is apt to be of a throbbing character, somewhat shifting, often accompanied by vertigo and tinnitus. This form will often be relieved by full doses of nitroglycerin, which not only relieves the tension, but

also produces an increased renal activity. The urinary examination is of the utmost importance, and no surely correct diagnosis can be made in any case of suspected kidney disease till the urine has been examined and found abnormal.

BRAIN TUMOR.

Headache which is constant, although it usually varies in degree, may be due to brain tumor, and is one of the most important symptoms to be noted in the diagnosis of a case in which such a lesion is suspected. The pain is often worse at night, and is usually more severe when the tumor is of the cerebellum than tumors of the cerebrum. Headaches due to brain tumor often have exascerbations with a regularity suggesting malarial disease, and, conversely, care should be taken not to mistake malarial headache for brain tumor. Next to headache, the most confirmatory evidence of brain tumor is poplitis.

SYPHILIS.

Care should be taken in a case of constant and severe headache that it be not thought due to brain tumor until the possibility of its being caused by a syphilitic gumma, syphilitic arteritis, or syphilitic meningitis is excluded, for mental depression and crashing head pains occur in all these states. The differentiation may be hard, unless there is a history of specific disease or manifestations of this disorder in scars or other external signs of syphilis. Improvements in the symptoms under the use of the iodides and mercury would indicate syphilis. The presence of optic neuritis would indicate tumor or meningitis, and would exclude arteritis, and in tumor the pain is apt to be localized, while in arteritis and meningitis it may be diffuse. The chief symptoms of arteritis are those indicating failure of a proper blood supply to the brain, as evidenced by giddiness, weakness of groups of muscles, difficulty in speech, so that the words are dropped out, and it may be symptoms like general paresis. In meningitis the symptoms are irritative, such as spasmodic paralysis and irritative fever.

BRAIN ABSCESS.

Violent headache is the most marked symptom of brain abscess; but focal symptoms—that is, localized palsy pointing to the area of the abscess—are very often absent, although the localizing symptoms due to tumor may of course be due to abscess if it is so placed as to press on nerve tracts or centers. The rise of temperature which frequently occurs in cerebral abscess is also indicative of the presence of pus, while the more rapid course of the disease, often only one or two weeks, points to abscess rather than tumor. Further than this, choked disc is rare in abscess, and common in brain tumor. The difficulty of separating the headache of brain tumor from that due to brain abscess is very great, for the symptoms with the headache are almost, if not quite, identical in both cases.

One of the most important of the differential points is the history of an injury to the head, or of the presence of an infecting focus which could have caused cerebral abscess.

MENINGITIS.

Severe headache, well diffused over the skull, coming on rather rapidly and associated with fever, stiffness of the back of the neck, vomiting, photophobia, delirium, and finally stupor and paralysis, is probably due to meningitis, or tubercular meningitis, effusion at the base of the brain, or, more rarely, to the onset of one of the acute infectious diseases in a severe form.

If the disease be tubercular meningitis, the head-pains will often be paroxysmal in character, so that the patient will at intervals of varying length give vent to sharp cries, evidently due to a sudden dart of pain. Vomiting may also be present, and ocular symptoms develop, such as ptosis, strabismus and unequal pupils, which have a sluggish reaction. The febrile movement will be irregular, now high, then very low; the temper peevish, if consciousness is present; and the skin pale and transparent. In severe and rapid cases of tubercular meningitis marked delirium comes on, the patient picks the bedclothes, and there are tender-

ness and stiffness in the nape of the neck. Pulmonary signs of the tubercular disease are often present, and even if absent a focus of tubercular disease can often be found elsewhere. Care should be taken that the case is not mistaken for and thought to be typhoid fever, which it may closely resemble in its early stages, when headache, malaise, languor, and remitting delirium are present. In children these symptoms of tubercular meningitis may be so marked as to lead the physician to the diagnosis of this disease almost at once. Usually for some two or three weeks before the onset of the severe symptoms the child will have been feverish and cross. Vomiting of a more or less obstinate form now comes on, and constipation is present. The pulse becomes slow and irregular, a mild fever is present and emaciation may be rapid. The general nervous state is one of apathy, but finally may be disturbed by the sharp hydrocephalic cry. The fact, however, that several other conditions produce identical signs in this class of patients renders caution necessary. It has just been pointed out that the onset of an infectious disease may so result, and it is to be remembered that inflammation of the middle ear of an acute type may cause every one of the symptoms just described. Such cases are often incorrectly diagnosed until a discharge from the ear, with great relief to the patient, clears up all doubt as to the malady. It is not to be forgotten that in some cases of severe gastrointestinal disorder there may be signs of meningeal inflammation, such as coma, squint, convulsions, myosis, cheyne-stokes' breathing and a depressed fontanelle.

Headache sometimes results from valvular heart disease. This in mitral regurgitation is often associated with vertigo, sleepiness, and, as night approaches, a mild delirium may come on. Its probable cause is congestion of the brain.

Headache may also arise from disease of the skull bones, either caries, astitis or periostitis, which result from injury, infection by syphilis, typhoid fever or tuberculosis; but there is nothing diagnostic about the headache in these cases save that it is generally most severe in the area involved, and pressure over that part may elicit more or less tenderness.

DISCUSSION.

Dr. J. L. Thompson, of Indianapolis: The doctor has presented the subject remarkably well in all its forms. I will speak of cases coming under my observation, in which the doctors have tried everything else, and then suggested that I examine the eye. I will speak first of astigmatism. This is such a very, very frequent cause. Astigmatism not of high degree, I mean—simply where the refraction in the two meridians is different. Of course, there are many different forms. We have the simple, combined and mixed astigmatism, where one part of the eye is nearsighted and the other farsighted, and sometimes the very lowest form of astigmatism, where it is only one-fourth, will cause severe headaches, especially in delicate women, and they are frequently benefited by giving cylindrical glasses, though sometimes we have cases where, in spite of all treatment, they are not relieved. And all this must be taken into consideration. Young girls going into school, that eat chocolates and icecream and knicknacks, in addition to their astigmatism, have these headaches. The one helps the other.

Hypermetropia frequently causes it by giving too much work to the accommodation. We ought to be able to see without making any effort. Take these young girls in school, cramming themselves with every kind of study, with improper eating habits. Their parents like to have them keep up with their studies, but in spite of giving them glasses they are not relieved. I often send such patients to the nose doctor, and he finds pressure on the nasal branch or the ophthalmic division of the fifth. That is sometimes the cause.

I have seen it frequently from brain tumor, as I saw in one case ten or fifteen years ago, who had terrible headaches. She had choked disc, and from the different symptoms I told the doctor she certainly had brain tumor. We put her on increasing doses of the iodides. In two years afterward, when I was called to her again, she had meningitis and died. We had a post-mortem, and found a large sarcoma in the cerebellum, embracing the whole of one lobe.

Then again we have headache from glaucoma, and it is one of the most essential things that every doctor should recognize glaucoma. See that the tension is not hard, and look into the anterior chamber. You will have dilatation of the pupil. They will send to the doctor for something to cure the headache, whereas they have this dangerous trouble—glaucoma.

Then there is migraine. Dr. Gould says every case of migraine is due to eyestrain. He stretches the matter, but I have had it from a strong cup of coffee, or from taking a very large drink of ice water. My memory would fail, and the most severe headache would come on. If they all came from eyestrain, 99 out of 100 would be cured. It will come on from different causes.

Dr. C. S. Bond, of Richmond: This subject is so large that if we knew all about it we would know all about medicine. Taking out all the strain of the special senses and things which impinge upon the nervous system directly, we could say all headaches were due to toxins. Now, even anemic headache is really a toxemia. It produces spasm of the small arterioles and causes headache. If we knew all about the toxins which invade the body we certainly would know all about the subject of medicine, and it seems absurd to talk about end products without going more into details. If one of these toxins had been traced out until it produced a headache, then we would have one cycle that would be of value. But this is not worked out yet. The toxin produces arterial tension and increases sensation, which becomes pain, etc. And then we have products in the blood-vessels which produce inflammation of cell tissue, as in the case of sclerosis. They make it harder for the heart to pump blood, and the brain receives increased pressure, and we have another evidence of toxins which follows the first condition of toxemia. As in Bright's disease, where we have a toxemia, then infiltration, increased action of the heart, the heart walls are enlarged to make the compensation, and so we have, after a time, the constant headache which comes in Bright's disease, producing sleeplessness, etc. So in discussing the matter we could not do better than to take one single one of these, the eyestrain, for instance; that would be enough to

put in a paper of this kind, and the other strains that come from outside sources, as sclerosis, should only be spoken of.

Dr. Robert Hessler, of Logansport: If I understood rightly, there were classes of cases not referred to. A man takes a ride on a wheel or on a trolley car in the summer time; he gets a headache. A person goes to a theater and gets a headache; or goes to church and has a headache on Monday. Then, again, farmers come to the city and get a headache; but on a rainy day they have no headache. Reference was made to Dr. Gould's biographical clinics. For instance, Jane Carlyle was country born. She would be miserable in the city, but all right in the country. Herbert Spencer, classed by Dr. Gould as an eyestrain man, was all right in the country, but not in the city. I would like to know why that is.

THE ESSENTIALS OF TREATMENT OF ACUTE INFLAMMATION OF THE MIDDLE EAR.

BY ALBERT E. BULSON, JR., B. S., M. D., FORT WAYNE, INDIANA.

In the selection of this subject, I am not unmindful of the fact that there is at present a diversity of opinion among otologists as to the essentials of treatment of an acute inflammation of the middle ear; and in giving my personal views, based largely upon observation and experience, it is quite possible I shall advocate some measures which may seem somewhat radical. It is gratifying, however, that the trend of medical teaching today is in favor of more radicalism in the treatment of acute ear inflammations, and that the so-called "waiting policy" in the management of these cases is considered by most progressive otologists as carrying with it a decided element of danger.

Most authors divide acute inflammation of the middle ear into two forms, the catarrhal and purulent. Clinically the two forms should be considered as different stages of the same disease, the difference in the character of the inflammatory process depending upon the presence and activity of the infection and the resisting power of the tissues, features that are always factors in the production and limitation of an inflammation of the middle ear. That every acute inflammation of the middle ear does not end in purulency depends upon the fact that either the micro-organisms necessary for purulency are not there, or if there, are inactive through resisting power of the tissues to invasion of the infection.

Bacteriologic investigations have shown that various micro-organisms can produce a similar pathologic effect upon the middle ear, but as a rule the milder forms of middle ear inflammation are produced by the pneumococcus or staphylococcus, and the severer forms by the streptococcus (Nadoleczny). The fact that the milder forms of middle ear inflammation often run into the

severer forms makes it difficult, if not impossible, in many cases to distinguish the two forms of inflammation described by most authors. Neither subjectively nor objectively will the symptoms in a large percentage of cases give evidence of the character of the infection at work, for in some individuals the pain will be very severe and the congestion of the membrani-tympani pronounced in a comparatively mild inflammation, while in others the pain will be mild and the external evidences of congestion not marked in a very severe inflammation.

In probably 99 per cent. of all cases the infection reaches the middle ear through the eustachian tube. Even in healthy individuals the bacteriologic examination of the secretion from the naso-pharynx almost always shows the presence of a certain number of pathogenic bacteria, and in the presence of disease conditions of the naso-pharynx, as in the case of hypertrophoid and degenerated conditions of the lymphoid pharyngeal structures, or inflammation of the nasal and pharyngeal mucous membrane accompanying many of the infections and contagious diseases, the number of pathogenic bacteria are greatly increased.

The extension of bacteria to the middle ear by means of the eustachian tube is accomplished through mechanical means, as from pressure by blowing the nose and swallowing, or by extension of the inflammation through continuity of tissue. Predisposition as well as activity of the infection will in a large measure determine the extent and severity of the inflammation. If the infection is mild the inflammation may not terminate in the suppuration but continue to the end devoid of severe symptoms or manifestations, and as such be classed with the catarrhal inflammations in which the exudation is seromucous in character and the bacteria few in number and of low vitality. It should be remembered, however, that such an inflammation may be transformed into the suppurative type through introduction of more active infection through the eustachian tube, or in case of perforation of the drum membrane, from the external auditory canal. What, therefore, begins as a comparatively mild inflammation, may very quickly pass into a severe inflammation, with all the

attending danger of complications and perhaps loss of life. This transition of one type to the other may be so rapid as to escape early recognition unless the otologist is in a position to watch the progress of the inflammation much closer than is generally the case, and as a result proper treatment may be adopted too late to limit ravages of the disease which might be limited or prevented by earlier attention.

The possibilities of an earache, and a moderately congested ear-drum in whole or in part, are not limited to a few hours or days of discomfort and moderate impairment of hearing which a hot water bag and judicious Politzeration will relieve, but include all the dangers which accompany a violent inflammation in a region connected with or surrounded by some of the most vital structures in the body. The recognition of the possible seriousness of every earache and the gravity of every acute inflammation of the middle ear, and the necessity for prompt and energetic treatment of such conditions can not be too forcibly impressed upon the minds of general practitioners and public if we are to make any progress in limiting the number of cases of partial or complete deafness, intracranial complications, and fatal results which now frequently follow in the wake of middle ear diseases.

Prophylactic treatment in cases predisposed to middle ear inflammation is too often overlooked or given inadequate attention. The mild earaches which promptly subside under simple treatment or no treatment at all, should lead to an investigation as to the predisposing causes. In the majority of such instances there will be found various forms of diseased conditions of the upper respiratory tract. In children adenoids and enlarged tonsils are a prolific source of middle ear inflammation, while in adults obstructive lesions of the nose are more frequently predisposing factors. Such conditions should be recognized and given prompt attention if we are to do the most to prevent the development of many acute inflammations of the middle ear. Lowered resisting power from the effects of various debilitating diseases should also receive appropriate constitution treatment, while the local treatment of the nose and throat in the exanthemata, influenza and all other in-

fectious or contagious diseases in which the mucous membrane is affected, should never be neglected.

In practically every case of acute middle ear inflammation the patient seeks relief because of discomfort or impairment of hearing, or both. Treatment may be instituted which will have a tendency to relieve pain, prevent complications from extension of the diseased process, and restore the hearing. For the relief of pain it would seem superfluous to condemn the use of opiates, and yet as a few text-books recommend such treatment with but little qualification it seems pertinent to oppose it on the ground that opiates mask the symptoms and at times give the patient as well as surgeon a sense of false security. Pain is only a symptom and is of sufficient diagnostic importance to warrant no treatment which will simply obtund it without relieving the diseased condition which is causing it. Dry heat will generally give relief if measures short of operative are to be sufficient to produce the desired results. But as the pain is due to pressure from congestion and exudates resulting therefrom, the essential treatment must come from depletion. This may be accomplished in whole or part by cartharsis, leeching, the application of carbolic acid and glycerine solution to the membrana tympani for its osmotice effect, and direct incision into the congested tissues. When seen early or before the inflammation has progressed to the point where there is marked congestion of all or any part of the membrana tympani, the inflammatory process may often be checked by free purgation, the use of leeches to the tissues immediately in front of the tragus, carbolic acid and glycerine tampons, and the application of heat to the ear. More often, however, the patient does not see the aid of the physician until the membrana tympani is decidedly congested if not already bulging, and then to delay the more heroic measures of incising the drum membrane is to invite complications and prolong the suffering of the patient.

Many otologists of skill and experience recommend waiting until there is bulging of the membrana tympani before practicing incision, and even go so far as to call it pernicious and meddlesome surgery to incise the drum membrane at any other time than when

there is bulging. It is accepted as a fact that sometimes a waiting policy brings with it good results, but there are some of us, who, having seen unfortunate results from the waiting policy, prefer not to take the chances. If we remember the direct connection which exists between the mastoid antrum and middle ear, and the tendency for infection to travel, especially in the direction of least resistance, we can readily understand how the infective process may extend to the antrum without indicating its tendency to extension by bulging of the drum membrane, and particularly in those cases in which the drum membrane is abnormally unyielding, as is not infrequently the case. I have seen mastoid complications which come to operation without there ever having occurred bulging of the drum membrane, and which I am satisfied would not have occurred had early and free drainage through the membrana tympani been established.

When properly done, incision of the drum membrane is appropriate treatment of those cases of acute inflammation of the middle ear, either with or without severe pain, which present marked congestion of either part or the whole of the membrane, and whether bulging or not. By means of the incision depletion of the tissues is secured, the pressure is reduced and the associated pain relieved, required drainage is established, and in the majority of cases mastoid and other complications are prevented. The incision should be free, preferably in the posterior quadrant, and should be performed under strict aseptic precautions. Subsequently the external auditory canal should be packed with a strip of dry sterile gauze, the end of which should be placed against the drum membrane for the purpose of drawing the secretions from the ear by capillary attraction. Due care should be observed to keep infection from entering from without. This can be accomplished by pursuing the ordinary rules of surgical cleanliness when replacing the gauze, as becomes necessary when it becomes saturated with secretion from the middle ear, and keeping the outer ear covered with an aseptic absorbent pad of cotton or gauze. When the discharge from the ear is profuse the gauze will require removal frequently, and before inserting fresh gauze the canal may be wiped dry with sterile cotton wrapped on a probe.

Following incision of the membrana tympani treatment directed to the relief of any nose or throat troubles may be continued, and inflation practiced in the usual way. Syringing, except when the discharge is purulent and profuse, is generally to be avoided as being detrimental through increasing the maceration of the tissues as well as increasing the liability of introduction of infection from without. Local medicinal applications to the middle ear are also considered superfluous if not detrimental in the early treatment. The gauze packing should be continued until the perforation in the drum membrane has closed.

In those cases which are commonly called catarrhal, in which the infection is of low vitality in which the discharge is seromucous in character, the relief by incision is prompt, and unless more active infection is introduced through eustachian tube or external auditory canal, the discharge seldom lasts more than a few days, sometimes but a few hours, upon the cessation of which the clean cut opening rapidly closes, and following a short period of inflation normal hearing returns. In those cases in which the discharge is purulent and profuse, the gauze drainage will be found inadequate if not detrimental through its action as an internal poultice. Syringing under aseptic precautions is then applicable and should be performed sufficiently often to keep the canal reasonably free of discharge. My own preference as to solution to be used favors sterile soda solution. The disintegration of a large portion of the drum membrane so common in many cases of acute purulent otitis media, will in a large measure be limited by not only keeping the auditory canal as free from discharge as possible by syringing, but by carefully and frequently drying the canal with sterile absorbent cotton.

Like any other surgical procedure, incision of the drum membrane should be done under aseptic precautions, the knife being sterile and the external auditory canal and drum membrane having been made as sterile as possible by thorough cleansing with a 1 to 3,000 bichloride solution. Following the opening of the drum membrane infection from without should be prevented by using only sterile instruments and gauze in the external auditory canal. If these precautions are followed there can be no possible cause

for the charge by a well known otologist that "opening of a drum membrane that is not bulging is pernicious practice." Rather is it more appropriate to say that it is pernicious practice to delay the adoption of such an inoffensive measure, when done properly, in those cases of congested drum membrane which from the rapidity of progress, severity of symptoms, predisposition from impaired health or the presence of complicating infectious or contagious diseases, give indication of steadily progressing inflammation to the point of bulging of the membrane and spontaneous rupture unless anticipated. I have personally never seen any complications arise from a properly done early incision of the membrana tympani, which I believe would not have occurred anyway. On the other hand I have seen delay in cessation of the discharge, impairment of hearing and sometimes more serious complications which I believe might have been limited or prevented had incision been performed before bulging occurred. In the early years of my practice it was my rule to await bulging before opening the drum membrane. Since adopting the more radical treatment of incision with the appearance of marked redness, my results from every standpoint have been better and my patients have been spared much unnecessary suffering, prolonged treatment, impairment of hearing and other possible complications which I am quite sure would have followed a less radical course of action. In a series of twenty operations for acute mastoiditis performed during the past eighteen months, twelve of the cases had rupture of the drum membrane at the time of the mastoid operation. During the same time, out of eleven cases of acute inflammation of the middle ear, with *late* incision of the drum membrane all but one case required more than six weeks for recovery. In a series of thirty-two other cases in which *early* incision of the drum membrane was performed, only one case required over three weeks for cure, and a majority of the cases received in less than ten days, and not a few in less than five days.

With early incision the pain is almost immediately relieved, the intensity of the inflammatory process is diminished, the exudate in the tympanic cavity is given an outlet, thus lessening the tendency

to extension to adjoining structures and producing more serious complications, and the chances for adhesive changes in the sound conducting apparatus are lessened.

In the early treatment of every case it is advisable to secure a prompt and free movement of the bowels. Calomel in small but frequently repeated doses, followed by a saline is best for the purpose. The patient's chances for an early recovery will also be increased if he is kept in bed until the active inflammation in the middle ear has subsided. For the relief of neuralgic pain, if present either before or after the incision of the drum membrane, dry heat will be found most agreeable to the patient. In every case the catarrhal conditions of the nose and nasopharynx should be treated, but during the height of an acute middle ear inflammation it is seldom necessary to do anything more than cleanse the nose and throat with an alkaline antiseptic spray to aid in preventing infectious material from entering the eustachian tube. During the course of a middle ear inflammation or the progress of an infectious or contagious disease the patient should be advised to blow the nose with caution, with a view to preventing the forcing of infection into the tympanic cavity. In children enlarged tonsils and adenoids are hotbeds for the retention and development of infection which predispose to inflammations of the middle ear, and their removal should be accomplished without delay. The treatment of a constitutional dyscrasia should also not be neglected, for the administration of tonics, alteratives or other indicated treatment will do much to hasten recovery from the ear complication.

Inflation by Politzer's method in the presence of an intact membrana tympani, while seemingly beneficial in some cases may be productive of harm in others. There can be not the slightest doubt that infection may be forced from the tympanic cavity to the epitympanic space, and thence into the mastoid antrum by inflation, even when skilfully performed; and the possibilities of changing what is and what might remain a mild infection of the middle ear into a severe infection by forcing more active microorganisms through the eustachian tube by inflation, should not be considered lightly. I am firmly convinced that I have on more

than one occasion, in the earlier years of my practice, been indirectly responsible for an unfortunate change in the character and severity of an acute inflammation of the middle ear by following the practice, too freely recommended by many reputable otologists, of inflating the ear cavity in the presence of inflammation. In recognizing the evil effects of the treatment I am not willing to admit any laxity on my part in observing the precautions ordinarily followed. The evil effects have occurred by forcing infection to regions hitherto uninvaded, and the complications thus brought about are not dependent upon any carelessness in the methods employed. It is more rational treatment to postpone inflation until after the acute symptoms have subsided, or until after the membrana tympani has been opened.

In my judgment acute inflammation of the middle ear is essentially a surgical disease, and its successful treatment depends upon the early establishment of drainage, but in a summary of the recommendations for the treatment of the affection from its incipiency I would say:

1. The patient should be kept quiet, preferably in bed, and the more active symptoms the more necessary for the enforcement of this measure.

2. Secure a prompt and free movement of the bowels by means of calomel and salines.

3. Secure depletion of the vessels of the membrana tympani and tympanic cavity by leeches applied to the region immediately in front of the tragus, and the osmotic effect of carbolic acid and glycerine tampons applied directly against the drum membrane.

4. Cleanse the nasal and pharayngeal mucous membrane with a saline antiseptic douche. Remove any existing hypertrophied lymphoid tissue.

5. Advise cautious blowing of the nose to limit introduction of infection to the tympanic cavity.

6. Apply dry heat to aid in control of pain.

7. Incision of the drum membrane under strict aseptic precautions upon the appearance of pronounced redness of any portion of that organ when accompanied by pain, impairment of hearing, and other evidences of acute inflammation.

8. Following perforation of the drum membrane the use of aseptic dry gauze packing for the purpose of excluding infection from without and also to withdraw the discharge from the tympanic cavity by capillary attraction.

9. Syringing, under aseptic precautions, only when the discharge is purulent and profuse, to be followed by as thorough drying as possible with absorbent cotton.

10. Judicious inflation by Politzer's method only after the acute symptoms have subsided or the drum membrane has been opened, to facilitate removal of discharge from the tympanic cavity and prevent adhesive changes in the sound conducting apparatus.

11. Appropriate treatment of any associated systemic disease.

DISCUSSION.

Dr. George Knapp, of Vincennes: We all recognize the fact that there are no ironclad rules in the treatment of any disease process, and especially of the ear. As Dr. Bulson stated, the first call is for prophylaxis. The nose is a frequent focus of infection. The nose in typhoid should receive attention. Frequent otitic examinations should be made, and especially in scarlet fever and measles. When I see a case early, I advise absolute rest and regulation of the diet and free elimination. The nose and nasopharynx must be kept free of secretions and the pathological conditions relieved as early as possible. The pain, as stated by Dr. Bulson, may be relieved by hot compresses to the ear and by dropping into the external auditory canal warm, carbolized glycerin solution, which serves not only to relieve the pain, but to disinfect. Opium in any form should never be used, and the coal tar preparations seldom. The indications for paracentesis of the membrane, as I have found them in my experience, are continued pain, marked deafness in a previously healthy ear and bulging of the membrane. I wish to emphasize the necessity of thorough asepsis in this little operation. We should not only sterilize the instruments, but should exercise the same precautions as to the field, as in an abdominal section. Free incision, and not a mere puncture, should be made, so that free drainage is secured. The

after treatment is a matter, I think, largely to be decided by the operator. If the pain and fever continue in spite of free drainage and adequate subsequent treatment, we must consider the advisability of opening the mastoid antrum and draining the same according to general surgical principles.

Dr. J. J. Kyle, of Indianapolis: Dr. Bulson's paper is a very estimable one, yet a great deal of the advice was intended for the specialist, rather than the general practitioner. Men who have performed paracentesis frequently must know that especially in children it is very difficult, and then to say that all cases of acute inflammation demand paracentesis is hardly true.

Dr. Bulson: I did not say all.

Dr. Kyle: No; but you advise the operation. I want to speak of the treatment of the nasal cavity in these cases. The eustachian tube is swollen and drainage stopped, and in consequence of that it is necessary to take some measure to open it up. Now, in addition to the alkaline treatment of the nasal cavity, if it was a case of mine I would cocainize the nasal cavity and get a free opening. Second, I would use a solution of adrenalin, and thus shrink up the tissues surrounding the orifice of the eustachian tube, and by doing that would aid in carrying away the exudate in the middle ear. So many cases refuse paracentesis. Many of you have found it so. Nine out of ten object, and in consequence you have to resort to other methods of treatment; and in many cases, by opening up the eustachian tube from below you get drainage, and with depletion by glycerin and carbolic acid, as mentioned, it will bring about resolution in a short time. On the other hand, there is some danger in doing a paracentesis. You might accidentally injure the facial nerve. I know it can be done, because I have had personal experience, and to jab around in the dark, especially in children, you are taking a great chance of bringing about some permanent injury. Of course, the membrane in the newborn is almost as large as in the adult, but the auditory canal is very small, and it is hard to see the membrana tympani. There are many cases of acute inflammation of the

middle ear in infants, due to want of absorption of the amniotic fluid. Many of these cases go on to suppuration. Many develop into permanent deafness. I believe, just as the doctor says, that any surgical measures about the middle ear demand the most careful aseptic precautions. I do not believe there is really very much danger in opening the membrane under aseptic precautions, but I believe it takes a very skillful man to religiously adhere to the rule of performing a paracentesis in every case of prolonged inflammation of the middle ear.

Dr. George F. Keiper, of Lafayette: In every instrument set there is a laryngotome sufficient to puncture the membrane and let out pus. If any one relies on that, however, they are liable to slip up. The incision must be free. The doctor speaks of incision of the membrane where there is no bulging. I doubt whether you would get any pus at all. I have seen some cases of mastoid trouble along the line the doctor has spoken of, where there was no bulging and incision of the membrane showed no pus, but on opening the antrum pus flowed freely.

If, as physicians, we would take the pains to section a few temporal bones in order to show well the adjacent structures, I am sure you would see the reason why it is that the otologist is quite so insistent upon care being taken so far as the treatment of the middle ear is concerned. Dr. Bulson's paper appears somewhat radical in the matters he has presented, and yet, after all, I believe it is a paper borne out by the experience of the doctor, and which, in a large measure, confirms the experience of others who have had experience along like lines.

Dr. J. F. Barnhill, of Indianapolis: I did not have the pleasure of hearing the paper. The paper appears to me as being one that should be thoroughly discussed. The essentials of treatment of acute inflammation of the middle ear are the same essentials that should be found in any other inflammatory condition. It is a mistake, I believe, which too many of us make in regard to the ear as an entity of itself. Whatever surgery is applied to the ear is and should be based upon general surgical principles

which have become known as efficient in other parts of the body. We can not ignore them. The first essential, when such a case applies to the physician, is to find out exactly what the matter is—what condition is present in the middle ear demanding treatment. The essentials of the treatment of an aching ear the first few hours are very different from the essentials of an ear that has advanced the first few days. In the beginning I suppose the essayist spoke of general antiphlogistic treatment. I believe many can be aborted early in the disease. I have great faith in those cases not due to a violent infection being radically helped or aborted by such means as the frequent application of leeches in and along the ear, thorough purgation and anodynes administered internally or hypodermically. When these remedies are found to be useless, I believe then in surgical means when pus has once formed in the middle ear, and while the treatment spoken of by Dr. Kyle should also be applied, the same surgical principle of letting that pus out is as good here as if applied to any other part of the body.

Dr. J. L. Thompson, of Indianapolis: I have had a great experience in the treatment of the ear, and I imagine the paper was a remarkable one, but not as regards the use of leeches. You can do so much good with leeches, and every practitioner ought to have them in his office. And then you need not be afraid of puncturing the drum membrane, because it closes readily. When the puncture comes from internal causes it is difficult to close it. It must be closed while vital. There are cases where it can not be done; but where you can, every practitioner should examine the ear and be prepared to do what is necessary. But have leeches in the office, whatever you do.

Dr. A. E. Bulson, Jr., of Ft. Wayne: As the boy says, I expected to be warmed up on this a little bit. I had the pleasure of presenting the substance of this paper before the American Otological Society, and there was a hot discussion following it; and I am pleased to say some of the most progressive men endorsed me, while some equally progressive men agreed that it was pretty radical, and agreed with Dr. Kyle in regard to paracen-

tesis. I would say that it is an operation attended with some danger, but I am surprised that Dr. Kyle, an otologist, will talk about its difficulty and the danger of wounding the facial nerve when he knows that is exceedingly rare when it is done by any one who has had any experience at all. I did not say all cases should have the operation. In the first place, I did not use the term paracentesis. The word should be stricken from otology. We want good, free drainage, and no little puncture that will soon close will do any good. I particularly advocated what Dr. Thompson and Dr. Barnhill have spoken of—a very early depletion by leeches and by catharsis and heat before surgical measures, and if they do not produce relief, then free incision. I never perform a free incision until I try these first. But if the congestion persists, I am right sure it will continue, and it is going to continue to the point of bulging. And I want to say there are a whole lot of these membranes that will not bulge until the antrum is filled with pus. Pollitzer says that in acute suppurative trouble of the middle ear the pus is in the antrum. He says this is borne out by post-mortem findings, but there is much less virulency than in the infection that occurs in the middle ear; but there is no saying the infection may not be increased in virulency by the infection from the middle ear, and if it can not get out it will get between the epitympanic plates and into the antrum. I would rather open one hundred membranes than to let one escape and lose my patient. I can see no harm in doing this operation under proper surgical precautions, and that is the way it should be done. Furthermore, as to the consent of the patient. I do not know what class of patients Dr. Kyle has in Indianapolis, but I seldom ever have any objection raised if the matter is properly explained. I think if a man approaches it in the right way they will have sufficient confidence in you to say yes. It is not a painful operation. With the use of mixtures of menthol, cocaine and carbolic acid it is very little painful. Children are always put to sleep. I would not attempt to perform this in children with some one holding them, but put them to sleep, and you can not do it right unless you do.

FOOD ADULTERATION.

BY R. W. TERHUNE, M. D., OF WHITELAND, IND.

The subject of food adulteration is receiving somewhat more attention now than formerly. Food adulteration was practiced even in Greek and Roman times, but not to its present extent. The vast increase in the population of the world, especially the urban population, renders the use of manufactured food necessary, made a way possible for the adulteration of food as a means of gain, of which man's cupidity was not slow to take advantage. It is difficult to tell the extent to which food adulteration would have gone had not microscopy and analytical chemistry arisen to stay its progress.

As a consequence of the process of education and general enlightenment that is all the time going on, the subject of food adulteration is becoming a matter of general interest.

Though the subject is as old as civilization, the Americans, until recently, have given it but scant attention. The ancient Greeks, in the interest of the public weal, appointed public food inspectors, but as those officials lacked the essential help of microscopy and modern chemistry, their efforts to circumvent the cupidity of the food adulterators were often futile.

The Romans were guilty of adulterating their daily bread with an impalpable mineral substance, while the activity of the drink adulterators was so great that a pure wine could seldom be obtained in the open market.

The mediaeval English were great bibbers of ale. If suspicious of its purity, they poured some of it out upon the broad benches of the inns and alehouses in which they drank and then sat down in it. If their leather breeches stuck to the bench, they knew their beloved beverage had been sophisticated with sugar. But such rough and ready chemistry did not apply to other articles of

food, so the Anglo-Saxon world continued to eat, drink and be merry in blissful ignorance of the things on which it fed.

But the exploitation of the western continent, the development of steam navigation, and railway traffic, the rapid increase in the world's population, the departure from an agricultural life, and the growth of urban populations, enhancing to a wonderful degree the necessity and demand for manufactured food products, all paved the way for food adulteration as a means of gain, of which man's cupidity was not slow to avail itself. Food adulterations spread like a contagion, ever growing bolder and more callous of harmful consequences, and it is hard to estimate its limitations had not microscopy and the science of analytical chemistry arisen to check its progress.

The chemist Hassel was the first to sound the alarm in England, as far back as 1850. Though the English public was aroused into activity by his revelations, the Americans gave no heed, and for more than thirty years continued to live in blissful ignorance of the nature of their daily food.

At last Massachusetts sustained her reputation for superior enlightenment by passing, first of all the States, a pure food law. Minnesota and Ohio soon followed with State laws. However, at the end of the first decade after Massachusetts had passed her law only four other States, or five altogether, had deemed any pure food legislation necessary. The people in general were apathetic and greatly bored at the efforts of a few persons, considered cranks and alarmists, to frighten them in regard to the wholesomeness of their daily food, and treated with scant courtesy the efforts of the chemists to enlighten them.

Much of the first pure food legislation was due to the untiring efforts of Dr. W. H. Wiley, now chief of the United States Bureau of Chemistry. With great energy he applied himself to the collection of samples of manufactured food products all over the United States. His researches embraced a microscopical and chemical examination of dairy products, spices and condiments, alcoholic beverages, lard, baking powder, sugar, confectionery, honey, beeswax, tea, coffee and cocoa preparations, canned vege-

tables, cereals and cereal products, preserved meats, fruits and fruit products, and olive oil.

The results were astounding. As samples of the adulteration carried on, it may be said that ground spice was found containing ground cereals, buckwheat hulls, olive stones and cocoanut shells. Baking powder was found filled with pumice stone. Mixtures masquerading as preserves, marmalades, jellies, etc., were found to be composed of the exhausted residue of cheap fruits, sweetened with glucose, filled with gelatine and colored with aniline dyes.

Toward this great question of food poisoning the people of Indiana were profoundly indifferent for a weary while. But Dr. J. N. Hurty, a man of high ability, a chemist, and a sanitarian of national repute, who has never received his just measure of appreciation from the people of his own State, was all the while as alert to the needs of the people of Indiana as was Dr. Wiley to those of the people at large.

As long ago as 1899 Dr. Hurty formulated a pure food law which was sanctioned by the State Legislature at the session of 1899, and became effective April 28, 1899.

An examination of the law shows it to be sweeping and conclusive, and when enforced is all the pure food legislation that we need for home protection. This law, capable of so much good, has been on our statute books for six years, but has all the time been a dead letter for lack of means to enforce it. What was needed to make it a matter of vital consequence was an appropriation for a State laboratory, where the necessary chemical and microscopical examinations could be made of all suspected articles. This matter was brought to the attention of the General Assembly in 1901, but failed of passage. In the session of 1903 the necessity for a laboratory was so apparent, and the measure of its practical utility was so ably presented to the legislators, that an appropriation providing for its establishment and support passed both houses. But, to the utter consternation of all friends of public health, the measure was even then lost by the veto power of the Governor.

With an inert law on the
Indiana went on apace. Nei
us in this important matter
dumping ground upon whicl
ucts of other States were ca
their way into our dining-r

During the year 1904 D
throughout the State, buyi
open markets, all of which
analysis were published in
Board of Health.

Some of their findings w
ples collected and analyzed.
One sample was simply ol
Indianapolis. Cream of tart
terated, eight, or 14.54 per
acid calcium phosphate and
alum, or the presence of p
dered clay in baking powde
forty-three samples examine
ty-four contain excess of alu
cent., not meeting legal requ
examined, found adulterate
served with salicylate of sod
ined, three were wholly arti
were glucose and cane sugar
amined, five were adulterate
lies, sixteen samples exami
jellies, but contained a larg
sample contained starch.

Summary: Of 191 sampl
ated. In Pennsylvania, whe
is kept going, the food labo
15, 1904, made analyses of
three adulterated, or 1.3 pe
of Indiana have been made t
to keep up a constant fight.

The following estimate shows the daily and annual loss to the people on account of the failure of the law-making power to give protection. The population of the State numbers 2,500,000. Of this number one-fifth, or 500,000, are wage-earners, earning on the average of 80 cents a day. This means that $400,000 are earned in Indiana every day, certainly a ridiculously low estimate. We have found it an actual fact that 47 per cent. of all food samples examined were adulterated. Of course, fresh meats, vegetables and fruits are never adulterated, and also over one-half of the samples of prepared foods were unadulterated, therefore it will not do to take 47 per cent. as a basis of calculation. Let us, then, accept 5 per cent. of the money spent for foods as going for adulteration, and if one-half of the total daily wage goes for food, then we have 5 per cent. of $200,000, or $10,000, lost each day to the people. In the course of one year this amounts to the sum of $3,650,000. This is Dr. Hurty's estimate, and, enormous as it seems to be, I think it is perhaps too conservative a statement, and that the true amount may be much larger than this.

The Secretary of Agriculture thinks that as much as 15 per cent. of all the money spent for food products is spent for adulterants, and Henry Irving Dodge avers that the amount of money spent for adulterated foods in the United States every year amounts to the enormous sum of $2,350,000,000. Think of a sum of money equaling the cost of our four years of civil war being paid every year for poisoned foods! It is almost inconceivable that such could be the case until we learn the far-reaching ramifications of the food-poisoners' art.

One writer on food adulteration speaks of a hypothetical dinner, at which the iced sardines were in reality tiny mackerel dipped in cottonseed oil; the fish preserved in boracic acid were served with egg dressing compounded of long-packed eggs and cotton oil, and gherkins, alum-hardened and copper-greened, all sprinkled over with a sawdust-of-sandal-wood substitute for red pepper. The turkey was stuffed with oysters preserved in boracic acid, the vinegar was dilute acetic acid colored with caramel, the

tomato catsup was made from decaying tomatoes and the intolerable filth from fruit-canning factory floors, all preserved with salicylic acid and colored with aniline dyes. The cranberry sauce was made from the exhausted residue of apple parings, sweetened with glucose and flavored with coal tar derivatives and colored with aniline dyes. The bread was made of flour, in which corncobs, husks and meal had been perfectly assimilated, the green peas were beautifully colored with copperas; the chicken salad was minced veal smothered with mayonnaise, and the ice cream was a mixture of milk thickened with gelatine and glucose and flavored with alcohol, resin and tonka-bean, a cheap substitute for vanilla.

Other hair-lifting discoveries of chemists at different times have been cheese made of skimmed milk and lard; ground coffee containing dried groundhogs' liver; strawberry preserves made of the juice of apple parings, timothy seed, gelatine, glucose, coal-tar flavors and aniline dyes; and some creation posing as lemon pie, which on analysis contained neither sugar, lemons nor eggs, but instead was made up of gelatine, glucose, coal tar derivative flavors and aniline dyes.

But it is not my purpose to exhibit a weird museum of products of the food poisoners' art, so I hasten to their most criminal of all offenses, the homicidal poisoning of milk.

Dr. Bigelow, chief of the Division of Food, United States Bureau of Chemistry, says: "The most common method of milk-adulteration is by skimming, then watering. Sometimes it is not skimmed, but in any event it is watered, which causes it to become a peculiar blue, familiar to all housewives. Its natural color is restored by arnotto, a coloring matter, or more commonly by a yellow coal tar derivative. A form of adulteration more prevalent than skimming and dilution, however, is the adding of chemical preservatives. Until recently boracic acid was used, but now a dilute solution of formaldehyde is more frequently introduced than all other preservatives. The addition of such preservatives to the only food available to very young children and to many who hang in the balance between life and death is nothing short

of a crime. I use the word in its fullest significance—a crime that can only be adequately punished by imprisonment."

As the adulteration of milk is a crime of widespread and frequent occurrence, we shall expect nothing else than an enormous infant mortality in all the cities. It is not necessary to go into details. It is sufficient to say that in New York city alone, in the year 1904, out of a total of 77,985 deaths, 21,952 were of children under two years of age. We shudder at the slaughter that has been going on for the last year in the Russo-Japanese war, but all the soldiers of Czar and Mikado that have gone down before the weapons of contending foemen are but a handful to the countless thousands of helpless innocents that are dying every year in the world as a result of poisoned milk.

Dr. Hurty has at last succeeded in getting an appropriation of $15,000 a year for the establishment and maintenance of a State Laboratory of Hygiene, where food samples may be analyzed and an active fight against food adulteration may thus be waged in future. His foresight, enthusiasm and perseverance, ultimately triumphing over all obstacles in the way of the establishment of this laboratory so full of economic and humanitarian promise, can not be too highly prized by the profession and people of our State.

But there is yet work for the rest of the profession to do.

In spite of local and State efforts to check this gigantic abuse, it is probable that larger quantities of adulterated foods are being put out by our manufacturers every year. Meanwhile the helpless people continue to ask for bread and receive a stone; continue to ask for a fish and receive a serpent. Of course, I do not presume to suggest a remedy, but I think that one thing that is needed is the enactment and rigid enforcement of a national pure food law, with uniform requirements for all the States. The friends of pure food have been faithfully laboring for twenty years to get a pure food law through Congress, but the labors of Sisyphus were trifling indeed when compared with the vexatious, discouraging obstacles and delays encountered by the promoters of such legislation.

Twice a satisfactory law has passed the Lower House, only to die of asphyxia in the Senate. A pure food bill has been introduced into every session of Congress since 1887. None of those bills has ever been voted down, nor will one ever be disposed of in this way. It is not by open nor "brawling opposition" that the Senate does its deadly work.

But manufacturing interests representing an annual output and sale of $2,350,000,000 of products are financially too powerful to be easily set at naught. The forces opposing the pure food crusade are able at any time to raise a fund of $200,000 or $250,000 to lobby against the proposed legislation.

All sorts of specious reasons are given for the failure of the bill to make headway. Perchance the technical wording is not correct, or the phraseology is obscure; or there is not time for its consideration. Tariff reform or rate legislation must be discussed; or the appointment of postmasters or patronage in general, or the *statehood* bill, providing jobs for four new Senators, four Representatives and a full complement of State officers, all take precedence over pure food legislation. In fact, whenever the pure food bill comes up for consideration it meets some obstacle that as effectually bars its way as though it encountered "cherubim and a flaming sword which turned every way."

Thus, by all sorts of ways that are dark and tricks that are vain the pure food legislation is hopelessly delayed. Dickens's Circumlocution Office was not more effective in delaying needed innovation than our venerable Senate.

Now that the conditions confronting the people are known, what can be done to correct the old abuses? In Anglo-Saxon countries, where the people rule, in order that existing laws may be enforced and much needed legislation brought about, it is necessary that every effort at reform should be sustained by an enlightened public sentiment. In creating this necessary public sentiment the medical profession has a work of the greatest altruistic moment. In this brief paper that I have read with so much misgiving I have presented no new facts. Every physician in the State knows the subject of food adulteration full as well as I

know it, and I do not arrogate to my paper any didactic value. But I do hope that it may have an ethical value in that it may arouse a few of those kind enough to listen to a realization of their power for good in all hygienic and civic affairs. We know full well that the warning voice of the medical profession in civic affairs has ever been as the voice of one crying in the wilderness. But that is the price we pay for our lack of unity and organization. If men of the healing art could but bring themselves to work harmoniously together, there is no beneficent work that they could not bring to pass.

When the physician begins his lifework, an altruistic work of caring for the afflicted of mankind, he steadily effaces himself from public affairs, and lives a life apart from the busy throngs of men.

We are so accustomed to this isolation, to this self-effacement and life of abnegation that we do not realize the vast potential power of the profession, composed, as it is, of 125,000 of the brightest minds and most unselfish personalities in the land.

No man can surpass the physician in personal influence if he but choose to exercise his power.

No man, not even the priest, gets so near the human heart, nor feels with such sympathy its changing throbs of joy or sorrow. In fact, the true physician is himself a priest at heart, shriving his confessors of their physical sins, taking upon himself the burden of their sorrows and pains, and regenerating their broken spirits with the benediction of his sympathy and hope.

So it behooves physicians, as lovers of their fellowmen, to convert this potential latent power into an actual militant force; to cease doing only the work of sordid cures and look from the suffering and sorrow and death around them back to the cause of things; to make plain to those that depend upon their knowledge for protection that the beginnings of a vast amount, at least, of infant mortality is due to the poisoning of their only food supply.

Once the whole people know the terrible consequence of this traffic in posioned food, the whole nefarious business in all its discoverable ramifications will be swept from the land as vigorously as piracy was swept from the seas in times past.

It is the physicians' duty as the guardian of public health that this knowledge shall become universal.

When the people really know the universal extent of food adulteration and are indignant at the financial losses and physical suffering that it entails they will protest, and their demands will be so strong and ominous that even the sleepy Senate must hear and heed.

DISCUSSION.

Dr. F. A. Tucker, of Noblesville: Food preservatives and food adulteration is a subject that could be controlled by the prime principles of honesty as a base for a food law. The necessity of preserving food in some way has been recognized in the homes and factories since man has emerged from his primitive state. But the modern science of chemistry has placed the means of preserving foods and making tints and colors so fine an art that ordinary means can not detect them. I believe the rights of the consumer are paramount, and he should be consulted as to his tastes and desires, and he should be protected by the State, in so far as chemical analysis of foods, as to artificial coloring, preservatives and antiseptics are concerned. When they are harmful to the consumer in any manner, they should be eliminated. I believe the education of the public in regard to artificial colorings and harmful preservatives to be quite as effective as legislation, especially after a bill for a food law is amended and counter-amended by so-called "wise" legislators, reaches the Governor for his signature its good intents and power of rendering a definite good are about all gone.

Every food stuff placed upon the market should bear a label stating what the food is, and if preservatives or colorings are used should specifically state their nature and amount so used. We should be very careful about drawing the line too close as between adulteration and food preservatives. The dangers to the consumer arising from reputably prepared foods to which preservatives have been added is nothing as compared to the dangers from foods having undergone putrefactive changes. Problems of such importance should be decided by medical men and expert

chemists, and not in courts of law. Our fund of scientific knowledge on the subject should be increased over what it now is, and we, as medical men, should at least be in advance of legislation. I am proud of Indiana as a State, that she soon will have in full operation laboratories for scientific analysis of foods and drugs for the protection of the unsuspecting public, who should, in turn, be educated by the profession along these lines.

As an economic principle it is apparent that a nation of more than eighty millions of people can not be fed direct from the farm to the consumer's table, for we have the problem of transportation of foodstuffs to the great cities in an edible condition; therefore, it becomes a necessity for some chemical preservatives, but not adulterants. These conditions must be met and controlled for the best interest of the consumer.

THE CARE OF THE INSANE AT HOME.

BY JENNIE JENKINS, M. D., ASSISTANT PHYSICIAN AT EASTERN INDIANA HOSPITAL FOR INSANE, RICHMOND, IND.

This is a phase of the great question of caring for our insane, the importance of which seems to have been somewhat lost in the universal interest and endeavor for the perfection of the institutional care of those thus afflicted. But when we consider that either for a longer or shorter time almost every patient must be cared for at home, before admission to an institution is possible, and that much which may contribute to the future welfare of the patient depends upon this interval, then we see how it becomes of great interest, especially so to the general practitioner, for it is to his attention, almost invariably, that the case is first brought by anxious friends, relatives, or even by the patient himself.

And just here might be said a word in regard to the relation between family and physician in these days of the division of medical responsibility. In former days the family physician was a very important factor in the economy of each household. He looked after the physical interests of the family, from the most trivial ailment to the most serious, and his only specialty was the entire anatomy. Of course, in these later days, it is not expedient nor desirable that this state of affairs should obtain, but certainly the close relationship, the mutual confidence between family and physician is much to be desired. In bringing about this state of affairs much depends upon the physician himself. If he shows himself to be a capable and interested friend of the family in the minor matters pretaining to the family health, it is not probable that he will miss the greater opportunity occasioned by the graver afflictions liable to come upon them.

And in no other event is the tact, the patience, the wisdom of the physician taxed more severely than when the mental de-

rangement of some member of the family is involved. Just here, where it is of prime importance that the earliest facts of the case be laid bare, and an early diagnosis be made possible, is when the physician often meets a disconcerting obstacle in the reluctance of the family to talk freely to him of the case. They usually act thus from the mistaken idea that such an affliction is a disgrace to themselves, or that loyalty to the patient demands a restriction of their statements regarding him. In these cases the physician who has the utter confidence of the family certainly works to an inestimable advantage.

The necessity for early diagnosis and consequent rational treatment is imperative. It is not absolutely essential that these cases be admitted to an institution, but experience teaches us, and statistics bear us out in the assertion, that more speedy and prompt recoveries are made, with the most comfort to the patient and the least anxiety to the family, if the patient is promptly placed under institutional care.

There is something in the routine and the daily round of hospital life which tends to control the patient, even when he little dreams that he is being controlled. Perhaps just here is the secret of the matter, that there is no direct controlling force to arouse his natural antagonism. The sight of dozens of others going to their meals quietly, retiring quietly, arising quietly, all at stated hours, and the evident but often unspoken expectation that he do likewise, all tend to create an influence which is hard for him to resist. Any patient who has sufficient mentality to observe and draw logical conclusions will soon feel and yield to this unspoken but ever-present influence. Even those more violently disturbed are in more or less degree affected by this system of repetition and example.

In a home, or even in a private institution, the controlling power must be exerted in a much more direct manner, and in most cases the more surely arouses the antagonism of the patient, the very thing that is most to be avoided.

In this connection the question may arise in the minds of some as to whether the personal interest in the individual patient can be what it should be under these circumstances.

There is no reason why it should not be. It is quite as much the duty of one having in charge the insane to learn their peculiarities, their particular temptations and inclinations, as it is to see that their rooms are properly kept.

The same method may have directly opposite effects upon different patients, according to their natural temperaments or their acquired ideas. These things a good nurse learns to see, and studies the proper thing to be said to each patient, to curtail some extravagant ideas, or to spur them on to greater effort in the right direction. A lack of this tact is considered a very grave fault in any attendant.

Such care as this is usually difficult to procure in a private family. Of course, if the patient has sufficient means to pay for the services of a trained nurse, the liability for good care is materially increased, but if, as in the vast majority of these cases, some member of the family or kind-hearted but inexperienced neighbor is the only dependence, then the difficulties are greatly multiplied. But even with the best of equipment possible, the care of an insane person at home is a grave responsibility, and one to be considered very seriously.

In speaking of the early diagnosis of these cases, it is not so important that an exact psychological diagnosis be made, as it is that the irresponsibility of the patient be recognized and that the subsequent management and treatment be considered with this in mind. There are certain duties owed all insane persons by their friends and caretakers which are too often lost sight of. It must be remembered that an insane mind is only one enfeebled and the normal functions of which are diverted by some pathological agent, and that when health is restored the person thus afflicted is apt to remember his delusions, his violent, absurd or obscene acts, and that this memory is often the cause of much mortification to him when he meets those who may have seen him at such times. So it becomes a duty to protect him from all unnecessary observation, to save him as far as is possible from all unpleasant results of such insane acts. It is a duty to the patient, no less than to the intended victim, to prevent as nearly as possible all acts of violence.

The exact psychosis of any given case can often be determined only after months of careful study by those experienced in this line of work. For our purpose in this paper, a very broad classification will answer the purpose: First, those violently disturbed, dangerous to themselves and to their attendants; and, second, those quietly delusional, tractable and amenable to reasonable authority.

The former class, including acute manias, some paranoias and the melancholias with suicidal intent, are pre-eminently cases for institution care, either public or private. But even these must often be cared for at home some days, at least, before removal to a more suitable place can be effected. Of these the acute manias constitute by far the most trying problem. What to do with them and how to control them are questions which confront the physician in charge, and are for individual solution in each case. Keeping in mind first, last and all the time the welfare of the patient, conditions must be met as they arise.

The first consideration is the preparation of a room, securing the safety and comfort of the patient. It matters not how crude this may be, so that it is effective. This preparation would include the securing of all exits against his possible escape and consequent exposure to the elements, or to unkind observation and remark, also to protect him against possible acts of violence toward those he might meet. If possible, without making it too apparent, the windows should be protected from his violence, thus preventing danger of injury to himself or others from the broken glass. All sharp instruments, such as knives, scissors, all glass, such as picture frames or fancy ornaments, all cords, and, in fact, anything that he could use for self-injury must be removed. In addition to these precautions must be added that of a constant attendant. One person must be responsible for the patient all the time, or for stated intervals, changing frequently as is necessary, but on no account must the patient be from under observation. And it is now that in the interests of humanity the patient must be protected from the curiosity of unnecessary observation. The neighbors are well-meaning, but, excepting the times that they can be

used as nurses, they must be kept away from the vicinity of the sick-room. Perfect quiet, pure air, sunshine, clean linen and a clean room are as necessary in this as in any other sickness. Good, nourishing food in normal quantities must be given, avoiding, for obvious reasons, all coarse, indigestible foods. The patient often refuses to eat, and in such case a degree of tact on the part of the one in charge may relieve the difficulty. But if all persuasion and reasonable force fail, then the physician himself must administer by means of the stomach tube, sufficient fluid, such as milk and eggs, or beef tea, to sustain life and energy. If the patient has persistently refused necessary medicines, this is a good time to give them, with the food.

The subject of medication is an important one. The first consideration is to obtain a healthy condition of the alimentary canal and keep it thus as nearly as is possible. This is to be accomplished by giving only light, easily digested food, by the administration of laxatives as is required, and by the use of intestinal antiseptics if desired. The condition of the urinary secretion is very important. In these cases of profound disturbance, complete retention is frequently found, making catheterization necessary. More often is found a marked diminution of secretion, amounting at times almost to suppression. In these cases, after determining definitely by examination of abdomen, or by catheterization, that there is no retention, an active diuretic should be given and continued until normal secretion is established. The urine is usually found to be of high specific gravity, loaded with phosphates and often with mixed urates. Albumen is not usually found unless there is a pre-existing lesion producing it. The same is true of sugar, excepting in some cases of specific brain lesion.

The condition of the skin is important, and at times a hot bath, opening up the pores, and producing a profuse perspiration, will be the means of the patient procuring some hours of restful sleep. No phase of this altogether difficult problem is more difficult than that of giving the patient the necessary rest, which almost always means sleep, from the wear and tear of his exciting or painful delusions.

Opium and its derivatives, a sheet-anchor in some pathological conditions, are most sedulously to be avoided in these cases. The heavy, exhaustive sleep produced thereby, and the confused, stupid condition upon awakening is certainly most undesirable. But the most potent argument against their use is their well-known power of clogging up the system, of decreasing the alimentary and urinary secretions, of producing nausea and deranging digestion. Certainly an agent producing the very conditions against which we are fighting is not a drug to be used. The danger of forming the opium habit in these cases is the least of its evils, but not to be ignored. The bromides, to be of use, must be given in large and regularly repeated doses, and it must be given several hours before the time the results are desired. In cases where careful examination reveals no heart lesion it is well to combine chloral hydrate with the bromides, especially if a quick action is required. The painful excitement and erratic psychomotor activity may often be controlled in some degree by this combination, without producing heavy sleep. When it is desired to give the patient a night's rest, there is nothing nicer in its action than hyoscine hydrobromate in 1-100 gr. doses, combined with 1-40 gr. apomorphia, given hypodermatically. It is seldom the dose will need to be repeated the same night, and the sleep produced is quiet, restful, natural, and there is no bad after effects. This is more or less depressing, and if the patient is feeble and has a bad heart, it must be used with great caution, if at all.

The subject of special dress and restraints need not be discussed here, as it is very seldom that a patient requiring these is kept in a private home long enough for them to become necessary.

While these acute cases tax the physician severely while they last, yet they do not, as a rule, remain under his care any great length of time. This is more apt to be the case with those coming under the second class, the melancholias, the chronic manias and dementias, and the neurasthenias.

All that has been said relative to the hygiene of the patient, and his surroundings under acute mania, can not be too highly

emphasized when dealing with these milder cases. It is with these that the doctor and nurse will need to exert all their ingenuity to create pleasing environments for their patient, to keep him interested, if possible, in matters outside his exaggerated egoism. In these cases a change of scene is effective. If a trip to the mountains or seaside is not possible, a removal from city to country, or vice versa, should be tried. The seeing of new faces, the meeting of new conditions, and their solution in the new surroundings constitute a useful pastime for them. But, whatever the means adopted, sight must not be lost of fundamental principles; that the patient and his welfare are prime considerations; that wherever he is, his surroundings must be congenial, cheerful and bright, and although visits from cheery, happy, helpful people are to be encouraged, indiscriminate visiting by the doleful, or the curious, sensation-hunting individual must be positively forbidden. In these cases the palatability of medicines and the daintiness of food enter greatly into consideration, for, as a rule, they are hypersensitive, childish and difficult to please.

So far as medication is concerned, it is essentially symptomatic. It should be ascertained by careful examination if there be any gross physical discrepancy, if all the organs of the anatomy are functionating properly, and if not they should be restored to health as promptly as may be, by either local treatment or the medication indicated.

In almost all these cases will be found a loss of tone, a depression, which may be materially diminished by a course of tonic treatment. The various preparations of iron, strychnine, phosphates and such like will be found useful for this purpose.

The conditions of bowels and kidneys must be carefully watched. The urine will often be found to be of specific gravity below normal, phosphates decreased or almost absent, urea not above one-half to one per cent. and calcium oxylate often abundant.

In this class of patients some light occupation, entirely different if possible from the usual vocation, can not be too highly

encouraged. If the season and location is suitable, outdoor employment, such as fancy gardening, the raising of flowers or poultry may be recommended. Long walks should be encouraged, irrespective of season of year or sex of patient. Of course, it is necessary that these patients have some one constantly with them, and responsible for them at all times. The attendant must become the patient's friend as well as his nurse. This dual role is a difficult one to play, whether the one attempting it be a trained nurse or a member of the family.

The question of sleep here is often a perplexing one. Opiates must be tabooed unless in great physical pain, for the dangers of forming a drug habit in these cases can not be overestimated. Usually the milder narcotics are sufficient for the purpose. Sufonal and trional in equal parts are exceedingly useful, or, if the patient sleeps well after getting to sleep, the trional alone is much better. There are many new drugs on the market, with varying degres of efficiency. Somnol and acetoform may be used with confidence.

Often agents aside from drugs are found to be efficacious—a warm, not hot, bath, followed by light massage, or either of these alone, will serve the purpose. A very simple remedy, but one which often works like magic, is a bowl of hot milk, seasoned with salt and pepper, as is palatable to the patient, given after the patient has retired for the night.

The constant danger of self-destruction in these cases, especially the melancholias, is one that should be ever present in the mind of the nurse in charge. This fact constitutes a strong argument for placing the patient under institutional care. In this connection the physician can help matters very greatly by doing all in his power to remove from the minds of the family and patient the idea of there being a stigma attached to hospital treatment. It should never be considered a disgrace when such a step becomes necessary, but a grave responsibility and a condition worthy of all sympathy and kindly feeling for both patient and friends. It would minimize a great many of the disagreeable features of these cases for every one connected with them if this idea was

taught to the public, especially by physicians. If this thought of a stigma could be removed from the minds of the people, there would no longer be a temptation to deceive the patient when the trip to the hospital is undertaken. In dealing with the insane of any class, absolute honesty is required if their confidence and co-operation would be elicited.

There could be much said upon the subject of etiology and prophylaxis, but this would reach far beyond the limits of this paper. There is no doubt, however, but that much could be done to prevent this nervous breakdown in a great many cases if the necessity could be recognized early enough, and intelligent advice and care taken accordingly. One authority, in writing of this subject, sums up his conclusions thus: "Inadequate nerve nutrition, the cause of neurasthenia, the first link in the chain of mental disorder."

It might be well to keep this possibility in mind when treating nervous patients, especially in those who have an inherited predisposition to insanity.

CHOLECYSTITIS.

BY CHARLES J. COOK, OF INDIANAPOLIS.

The importance of a thorough understanding of cholecystitis can hardly be overestimated. I can not illustrate it better than by giving you the report of the Board of Health, of Indianapolis, for the past month, in which there were two deaths from cholecystitis.

There were 282 deaths reported to the Board of Health during the month of May, and of these there were fourteen deaths referred to the gastrointestinal tract, making a percentage of about 5 and arranged as follows:

1 Cholecystitis; female; 66 years; six days' duration.

1 Hepatitis; 34 years; one month duration.

1 Obstruction of gallsack; twelve days' duration.

1 Gallstones and splenic abscess; male; 45 years; one month duration.

Gastritis; 2 cases.

Chronic gastritis; 3 cases.

Carcinoma of stomach; 3 cases.

Gastroenteritis; 2 cases.

Classification.—Cholecystitis is divided clinically into acute, subacute and chronic. Anatomically into catarrhal, suppurative and phlegmonous, diphtheritic, gangrenous and fibrous, and may either be adhesive or obliterative. In regard to the presence or nonpresence of gallstones, we have the calculus and noncalculus forms. The etiology of cholecystitis and cholelithiasis have many points in common. They are both closely associated with some structural change in the lining of the gall-bladder.

Etiology.—Cholecystitis is defined by Osler to be an acute inflammation of the gall-bladder, usually due to bacterial invasion, with or without the presence of gallstones. The liability of the

gall-bladder to disease seems to be due to its position, like a guard between the intestine loaded with bacteria and the liver. The gall-bladder is affected by catarrhal trouble, much like a similar disturbance in the ear, the nose and the appendix. The micro-organisms that are associated etiologically with cholecystitis, aside from typhoid bacillus, are the colon-bacillus, streptococcus, staphylococcus, pneumococcus and tubercle bacillus.

It is a common experience that certain diseases contribute to the formation of gallstones, and, consequently, to cholecystitis—namely:

1. Typhoid fever and certain gastric and intestinal disorders.
2. Heart disease predisposed by the sedentary life and passive congestion of liver produced.
3. Gout and diabetes,
4. Cancer of the biliary passages.
5. Nephritis.

Mosher found nephritis associated with gallstones in 72 per cent. of his cases, and the fatal issue in operation for cholecystitis in the presence of gallstones can often be attributed to the complicating nephritis.

The intensity of the resulting inflammation only indicates the degree of virulence of the infection and conditions lowering the physiological resistance of the tissues. The noncalculus form is generally a lighter infection than that of the calculus. Musser states that the suppurative cholecystitis is based altogether on parasitic invasions.

The principal factors in the production of a gangrenous cholecystitis are (a) bacterial infection, (b) presence of gallstones and consequent pressure, (c) blocking of the common duct and consequent loss of drainage, (d) thrombosis of nutrient vessels.

The chronic fibrous form of cholecystitis is a result of prolonged catarrhal or suppurative inflammation of a very severe form. The study of the causes of gallstones is a subject that we do not care to consider at this time, only to notice the predisposing influences that we have come to associate with them, namely: (1) age, (2) sex, (3) pregnancy, (4) indolence, (5) gluttony, (6) constipation.

1. Age: We find that cholecystitis occurs generally after the age of forty. Gallstones are very rare in the first twenty years, and then increase in frequency.

2. Sex: Women are more frequent victims of the disease than men, in the proportion of 3 to 1; this is explained by child-bearing, tight lacing, greater tendency to sedentary habits and constipation, all of which tend to encroach on the area of the gall-bladder and interfere with its drainage.

The principal classes of men so affected are, first, the obese, and, second, the one who is indiscreet in relation to his diet and the regularity of it.

Symptoms.—The prominent symptoms in cholecystitis are: (1) pain, (2) tenderness, (3) fever and chills, (4) gastric disturbances, (5) nausea, (6) vomiting, (7) change in pulse rate, (8) shock, (9) collapse, (10) tumor, (11) jaundice, (12) urinary changes, (13) blood changes, (14) changes in the stools, (15) tympanitis, (16) constipation.

1. Pain. The character of the pain distinguishes this disease by its acute onset, usually colicky nature, being persistent and soon prostrating the indvidual; attacks occurring more frequently when the stomach is empty, and usually at night. It is frequently relieved to some extent by eating, and generally relieved by the escape of flatus from the bowel. The pain is situated in the right hypochondriac region and reflected to the right shoulder and back, as has been described by Lambert as a sense of something boring through the abdomen to the vertebra.

Murphy, Ferguson and many others claim that the pain is due to the effects of the stone, or to the distension of the gall-bladder or ducts, independent of infection, while Kehr, with many others, say that it is entirely dependent on inflammatory changes.

2. Tenderness. Tenderness is one of the most characteristic symptoms, being localized in the right hypochondriac region, as tenderness in appendicitis is localized in the right hypogastric region.

The Mayo Robson point is above and to the right of the umbilicus at the junction of the upper two-thirds with the lower one-

third of a line drawn from the ninth rib to the umbilicus, and is the point of maximum intensity of tenderness in a majority of cases. In the main it is just below the free border of the ribs at the junction of the ninth rib with its costal cartilage. Mayo Robson says that this is true, even in cases when the liver and gall-bladder are considerably displaced, as it is really the site of reflected pain passing along the splanchnic to the eighth and ninth dorsal nerves, and thence reflected to the surface of the termination of these nerves.

3. Fever and chills. Fever follows a severe rigor, with sweating, and subsides with the relief of the pain. It is of an acute type. The temperature chart shows a series of angles instead of curves. In event of the inflammation assuming an infected suppurative type, the fever takes this characteristic.

When gangrene occurs in the course of acute inflammation, we have, as in appendicitis resulting in gangrene, a period when gangrene first takes place, and before the general sepsis occurs an almost subsidence of symptoms. This condition is very alarming, and can only be happily recognized by the subsidence of pain, decreasing tenderness, the nervous phenomena lessened, subsidence of pulse and temperature towards normal, then it is that only a blood examination each hour to note the increase of leucocytosis will determine.

It is proper at this point to explain the present status of blood examinations in surgical diagnosis. In an analysis of 1,415 blood examinations Frederick E. Sondern, of New York, shows in March 25th number of the Medical Record three distinct pictures in inflammatory lesions.

1. A relative percentage of polyneuclear cells below seventy with an inflammatory leucotosis of any degree excludes the presence of gangrene or pus at the time the blood examination is made and usually indicates good body resistance toward infection.

Example.—Red cells, 4,900,000; hemoglobin, 82 per cent.; leucocytes, 28,400; polyneuclear cells, 59.7 per cent.—prompt recovery without purulent exudate; 10,200 leucocyte; 75.5 polyneuclear percentage; clinical diagnosis cholecystitis; subsequent course; no abscess; no gangrene.

2. An increased relative percentage of polyneuclear cells, with little or no inflammatory leucocytosis, is still an absolute indication of the inflammatory process, and the percentage is a direct guide to the severity of the infection.

Example.—Red cells, 4,208,000; hemoglobin, 72 per cent.; leucocyte count, 7,200; with a polyneuclear percentage of 87 clearly indicates necessity for immediate operation.

3. An increased relative percentage of polyneuclear cells with a decided inflammatory leucocytosis. Most of the cases of inflammatory lesions, with or without purulent exudate, meet the specifications of this class, and the figures quoted above apply here as well.

4, 5, 6. Gastric disturbances, nausea and vomiting. Musser says "that nausea and vomiting are not so frequent in cholecystitis as they are in appendicitis;" vomiting comes on suddenly with the pain, being of a reflex nature, and nót much nausea preceding. In the lighter cases with gastric disturbances that are not relieved by lavage and antiseptic medication, cholecystitis will be found to be the cause. A temporary subsidence of the vomiting may result from the passage of the stone into the intestine or receding into the larger part of the duct.

7. Pulse. An increased tension and acceleration of the pulse is noticed in an acute attack, and during the course of the inflammation the pulse follows the condition.

8, 9. Shock and collapse. Mayo Robson mentions a case in which the shock from the acute, agonizing pain resulted fatally. The degree of shock and collapse will be commensurate with the intensity of the pain and the degree of resulting inflammation.

10. Tumor. The tumor is usually pyriform in shape, fluctuating and projecting below the three borders of the ribs, and there are recorded cases of it reaching below the umbilicus. It is generally much smaller and can not be made out definitely.

11. Jaundice. Is absent in from 80 to 90 per cent. of all operative cases, according to Brewer, and can not be relied upon in our diagnosis. There is no jaundice with obstruction of the cystic duct. There is only partial jaundice with obstruction of

the hepatic duct, and pronounced jaundice only with obstruction of the common duct. Jaundice may be caused by stone in the hepatic or common ducts, by inflammation of the common or hepatic ducts; by late carcinoma of the gall-bladder; by tumors of the hepatic or common duct or visceral connections; or by inflammations or localized peritonitis, producing adhesions of the common or hepatic duct.

12. Urinary changes. The presence or absence of bile in the examination will determine the presence of degree of jaundice.

13. Blood changes. Likewise an examination of the blood will determine the presence or degree of jaundice. Also the amount of leucocytosis will determine the degree of suppuration.

14. Stools. The stools are light in color to a clay color, depending on the presence of bile in the intestine or the absence of it. The presence or absence of gallstones may also be determined.

15. Tympanitis. The tympanitis occurring in the course of cholecystitis is generally localized to the upper right quadrant of the abdomen, but in an inflammation continuing to the greater degree in the phlegmonous form, we may have a general peritonitis with its tympanitis.

16. Constipation. Is a prominent symptom, being pronounced in a majority of cases, and it is believed that the majority of cases of chronic constipation have present with them, or had at some time, past disturbances of the gall-bladder.

X-ray. The positive diagnosis of gallstones by the X-ray is rare, and so is unsatisfactory in a majority of cases.

Diagnosis.—The diagnosis of cholecystitis is not easy. There is one in every ten adults suffering from gallstones, and about 5 per cent. of this number are suffering from symptoms that can be traced to gallstones.

Reidel says "that in the German Empire alone 2,000,000 have gallstones," then indeed only 100,000 feel anything of their stones, whilst 1,900,000 remain exempt from pain.

Some of the sufferers show such marked symptoms that they are easily recognized, but a large number of them present such vague symptoms that, though they are watched carefully through

a long period of suffering, they at last succumb to a new infection without having been operated upon in the interval and been cured.

Differential Diagnosis.—We have to differentiate from cholecystitis the following, namely: 1, gastric and duodenal ulcers; 2, appendicitis; 3, renal colic; 4, angina pectoris; 5, pancreatitis; 6, phlebitis portalis; 7, empyema; 8, subphrenic abscess; 9, malignant disease of the pylorus, doudenum, pancreas and liver.

1. Gastric and duodenal ulcers are differentiated by the history, and the pain comes on when the stomach is filled, is higher up and near the median line, also is less severe and not so pronounced; by examination of stomach contents after a test meal.

2. Appendicitis is differentiated by the history, difference of character of pain, location and radiation. Hutchkiss says "that in 24 to 48 hours in either disease the patient with cholecystitis will be in better condition."

3. Renal colic is differentiated by the history, and only in the rare cases of elongated gall-bladder will any difficulty be found, and then a urinalysis will determine.

4. Angina pectoris may be differentiated by the history and auscultation of heart.

5. Pancreatitis may be differentiated by the history and examination of the stools to determine the presence or absence of fat; the presence of a hemorrhagic condition will be a factor in determining pancreatitis. Stools are clay colored in hematogenesis jaundice.

6. Phlebitis portalis may be differentiated by a previous history of appendicitis and the characteristic temperature and symptoms of septicemia.

7, 8. Empyema and subphrenic abscess may be differentiated by the history and physical signs.

9. Malignant disease of the pylorus, duodenum, pancreas and liver may be differentiated by the history in each case, together with examination of stomach contents, the blood and the excretions may baffle the best internist, and the exploratory incision makes the diagnosis.

Treatment.—The treatment of mild cases without the presence

of stone is symptomatic, and many cases recover, and do not present the condition again. It is generally agreed that cases that have presented a degree of extended inflammation should be operated on. Just how far a given case can be safely carried without operation is a problem to us. We all know of cases that are around today and need operation and refuse it.

As to the use of medicine to prevent the formation of gallstones, there seems to be little benefit. We use olive oil and think we have a decided benefit, and then after its use for a long while it gets very nauseating, and we are compelled to discontinue it. Stewart gives the explanation of how olive oil can be of service, by saying "that with unobstructed pancreatic flow it is not improbable that by virtue of the fat-splitting ferment—stepsine—a portion of the oil is dissociated in the duodenum into its components, namely, fatty acid and glyceryl, and nacent glycerine is formed, and exerts in the duodenum an effect somewhat analogous to that which takes place when glycerine is introduced into the rectum, i. e., withdrawing water, causing hyperemia and inducing irritation of the affarent nerves of the part with which it comes into contact and this leading to active reflex peristalsis. The sodium phosphates have been used frequently with benefit. Glycolate of soda was spoken very highly of a few years ago.

The plea of this paper is for a better diagnosis, and though it is granted that an individual can live much longer with stones in the gall-bladder than he can from many other conditions, this only proves that the pathology of the disease should be thoroughly understood by us all, so that the case can be transferred to the surgeon in time to relieve the pathological condition.

The diagnosis of cholecystitis belongs to the general practitioner, for we all know the general feeling of the layman is against surgery when it concerns himself, and his welfare depends on the ability of the internist and his fraternity with the surgeon.

In the words of Kehr, "so much time must even the busy practitioner have that he at least makes the attempt to investigate thoroughly the cause of the pain; for we must not forget that the weal or woe of gallstone patients depends upon early diagnosis."

DISCUSSION.

Dr. Charles K. Bruner, of Greenfield: I wish to detail a very acute case that came under my care a few years since. The patient was a large, fleshy woman. She gave no definite history of any chronic trouble with the liver or with any other organ. She was 28 years old, the mother of three or four children, of a very robust family. The patient died, I think, in about 48 hours after I saw her. The autopsy revealed the most extensive condition of inflammation about the liver and gall-bladder I have ever seen. We removed 180 stones and lost a large number. They were not larger than a grain of wheat and completely filled the gall-bladder, which was extensively inflamed, as was also the liver itself. It was one-half size larger than normal and extensively diseased. From the history of the case I was unable to determine whether or not the disease had existed for some time. My impression was it was the result of acute infection that occurred within the few days she was in bed. I am sure with the improved method of diagnosis and technique of the surgery of the gall-bladder, these cases may be better handled than they can in the ordinary way. General practitioners see a large number of recurrent attacks of inflammation of the gall-bladder. Treatment generally is very satisfactory, speaking for relief. I have never had a case that went on to operation. Generally, the phosphate of soda administered in the morning will very greatly relieve the patient and render the gall-bladder clean. I regard this as the best remedy I am acquainted with. I have gotten good results, perhaps, from olive oil. As general practitioners, I think we ought to be very careful that we do not allow any of these cases to go by the opportunity for surgery, for the class of cases that have been spoken of here belong to the surgeon, and should be operated on promptly.

Dr. G. D. Kahlo, of Indianapolis: Whether the treatment of these cases is to be left to the physician or to the surgeon, certain it is that many of them are seen by the physician, and the early recognition of their nature depends upon the physician. Now,

there is no question when it comes to the treatment of these cases a certain percentage of gallstone cases properly belong to the surgeon, and can only be successfully treated by surgical interference. But I ask you gentlemen, who have had a good many cases, how many such cases as reported by Dr. Bruner have you actually seen? Is it not true that you see a great many cases of biliary colic that never come to such an unfortunate detrmination? Is it not true that at autopsy we see case after case filled with gallstones, with no symptom of a serious character in life? Now, if we are to accept the modern theory that this, as well as many other diseases has for its etiological factor a bacillary influence, then we can do a good deal in the prevention of this disease. If the omnipresent colon bacillus is to be given the credit, I believe that we can limit the liability to the occurrence of this disease by the proper prophylactic measures. We all know the influence of a sedentary life, coupled with an abundant diet in the production of such conditions, and we can anticipate this if patients show a predisposition to such troubles. Also careful physical examination of the abdomen, palpating deeply the site of the gall-bladder and duct will often elicit tenderness unsuspected long before the evidence of anything severe appears, and will put us on guard as to the possibility of the occurrence of such conditions, which, when they do arise, are very often of such serious character, even though they be treated surgically. The disease has progressed too far. Proper regulation of diet and exercise is of very great importance as a measure of prophylaxis in this condition. In the medicinal treatment I have used the conventional olive oil formerly, but I never could see how it could bring about any favorable result. Theoretically, at least, there would seem difficulty in the digestion of fats in the very condition in which cholecystitis is associated. The use of saline laxatives is attended with very excellent results. I have treated a number of such cases here at French Lick with these waters with apparent benefit, perhaps not more than would have been attained by an outdoor life and the administration of phosphate of soda or sulphate of soda, or something of this character. The blood examination is very

important in the matter of diagnosis and as indicating when we would do wisely to consult our surgical friends. The great majority of cases can be successfully dealt with without surgical interference. There are cases in which there are suppurative processes taking place in which the only hope is surgery, and the important question after all is the diagnosis, as indicated by the paper. The earlier the diagnosis the better the outlook for our patient. They exist more frequently than they are recognized. Patients go along showing symptoms of interference with the biliary excretion and without pronounced colic, and the cases are put down as intermittent fever or hepatic fever, and may be treated with quinine. As we improve in our ability to diagnosticate these conditions, we prevent their going on to a serious phase, which must be dealt with in a surgical way.

Dr. Chas. K. Bruner, of Greenfield: As to the coincidence of gallstone disease in Bright's disease, some years ago I saw a case that died of Bright's disease with the diagnosis clearly established. He gave no history of any liver trouble. Perhaps many years before he had been subject to colic, but not that I could trace. At the autopsy we found the gall-bladder full of stones, four of the largest I had ever seen. Later I had under my care a patient who had had repeated attacks of catarrhal jaundice; or inflammation of the common duct. He rapidly developed acute Bright's disease and died of it. The autopsy showed a thickened gall-bladder with adhesions. I only give this as a coincidence. But one I knew had gall-bladder trouble and the other did not.

Dr. L. P. Drayer, of Ft. Wayne: I would like to speak of two points. One is a matter of diagnosis in which stone is present and eliciting movement as the fetus is caused to move in ballotment as a test in pregnancy. By placing the hand on the lower border of the liver, with the patient standing, and with a quick upward thrust it causes the stone to move and gives the patient a sensation of sharp pain. This sign I have found rather constant where the gall-bladder was not the seat of an impaction. I believe the pain in cholecystitis is a rather late symptom as is the pain in appendicitis as a rule. Only after marked structural change has

taken place is pain a marked symptom, and unless this extensive change takes place pain is not important in the diagnosis of cholecystitis.

Another point is this, that nephritis is the commonest sequel, and the most fatal, perhaps, in cholemia, the result of reabsorbed bile. It is the commonest cause of death following operation, I believe, and that the bile is a most terrific poison and most certain to produce epithelial capillary change in the kidney is an indisputable fact. So that the kidney will bear even more watching than the gall-bladder. I do not believe they are all surgical. I believe a case of cholecystitis with the stones removed may completely recover. On the other hand so many of these cases go on to a ripe old age of three score and ten without ever suffering any inconvenience even with the gall-bladder full of stone, which has been demonstrated time after time in the deadhouse.

Dr. Theo. Potter, of Indianapolis: I really look upon this matter of gallstones as an exceedingly important one, because it marks one of the progressive steps of medicine in this day. For another cause the common recognition of cholecystitis as a frequent disease explains many, many cases of what have been heretofore loosely described as "liver trouble," and in the next place, because cholecystitis explains many of the cases of gallstone formation. It is very important for us to recognize in the modern doctrine of cholecystitis the causative influence of the infectious diseases in its production. Chief among them, perhaps, is typhoid, as the essayist noted. I have for a long time noted that these infectious processes may involve mucous or serous membranes elsewhere—of the eye, the ear, the throat, the Fallopian tubes, the appendix, or of the pleural membrane, but we have not heretofore placed the gall-bladder in that list in as important a place as it should occupy. I have seen two cases in the last year of typhoid complicated by gallstones. There is now attending this meeting a comparatively young man whom I have seen in the last year with typhoid complicated by a phlebitis which extended into the abdominal cavity, with pain in the region of the liver. This man said yesterday, "I suspect I have gallstones,

because since last fall I have had several attacks of pain about the liver." He had cholecystitis or phlebitis. If he goes on until he is fifty and turns up with gallstones, with some of their complications, possibly this may be the explanation of it all. I know a young medical student who had an attack of measles last fall complicated by an attack of cholecystitis. Since that time I have seen that young man with moderate attacks of cholecystitis which I think in past years would have been called congestion of the liver. If this young man should go on until he is fifty and then show the formation of gallstones possibly this attack of measles might explain their formation. The investigations of Naunyn and others have made very clear the origin of the cholesterin and the lime salts of the bile from the mucous membrane of the gall ducts and we think give the explanation of many cases of gallstones.

Just one remark regarding diagnosis of cholecystitis, which is not always so easy to make certain. In the physical examination of the abdomen a number of times my attention has been called to the fact that when the gall-bladder is acutely sore and tender, even though it can not always be felt (it is not always enlarged much, nor is it always enlarged outward, but inward), it will sometimes reveal that tenderness under the pressure caused by a sharp friction stroke. And that, I think, is also true of fluid as distinguished from solid tumors of the abdomen which are acutely tender. I think the explanation of that is this, that the wave of a sharp friction stroke is transmitted to the fluid tumor and this stretching the tender walls gives rise to pain. That little point has helped me several times.

Now as to treatment. It is undoubtedly true that the great majority of cases of acute cholecystitis are simple in character and recover, and surgery is necessary only in the suppurative forms. But if we remember that acute cholecystitis is liable to be followed, as in tonsilitis or appendicitis, by recurrent attacks and that the patient is preparing himself for an attack of gall-stone colic later, the question is whether he ought not to submit to surgery on account of the threat it holds to him in the years to

come. And while I do not say that all should be subjected to surgery I think we may well consider whether this ought not to apply to cases of recurrent cholecystitis holding the threat that they may become cancerous or suppurative at any time.

Dr. Welch, of Westport: This paper is interesting to me on account of the fact that I am afflicted with the complaint. At least that is my diagnosis. I have been afflicted since boyhood. I have never had an attack of pain and soreness until within the past six months, but I have been troubled with constipation and diarrhœa with a tight sphincter, and I have found that dilating the sphincter has given relief from the other trouble. This with the use of phosphate of sodium has given me a great deal of relief. In my practice in the treatment of gallstones the phosphate of soda with the succinate of soda has given good results without operation, but it does not give me any relief in my trouble. It is my observation that there is trouble in the rectum in cases of gallstones and cholecystitis.

Dr. Cook, closing: I know in looking over the record of cases I have seen several years back I have had cases I did not recognize. These cases that have excruciating pain we call gallstone colic. Frequently probably they are, but the next day they present a tumor in the region of the gall-bladder, and in looking for them in a day or two more they are gone. That only proves that it is a hydrops. There has been an accumulation there that has escaped through the common duct either by the dislodgment of a stone or the receding of that stone.

I remember years ago doing a post-mortem on an old lady down in my country. I had seen her for several years. She was drawn over and walked cramped up. That liver together with the gall-bladder and kidney and all the organs in that region were solidly bound together by adhesions that had been there since she was a girl. This illustrates how nature takes care of them.

I see in walking through the grounds here the name "Sprudel" writen on one of the springs. We know this is copied from Carlsbad. We know the Germans refer their cases to Carlsbad

as Dr. Kahlo has referred them here. In reading Kerr he does not recommend operation until they have taken a month of Sprudel.

Speaking of the case of my friend Dr. Bruner, I believe there are such cases. Years ago I saw a similar case that died too soon to get a surgeon. I saw a case last winter like his. It was a mastoid case but developed this trouble from Saturday night to Monday morning, then the patient died.

I think I mentioned fully about the complicating nephritis in all these gallstone cases. I think that is a very grave complication, and the diagnosis is not easy, and in many you must make your diagnosis by exclusion. There are many in which you can not feel the gall-bladder. It goes up under the border of the liver. Kerr mentions cases from which he removed many gallstones, yet the gall-bladder could not be felt before operation.

TREATMENT OF FRACTURES OF THE LOWER JAW.

BY J. H. OLIVER, M. D., OF INDIANAPOLIS, IND.

In presenting a short paper on this quite common and sometimes very annoying condition, the writer wishes to disclaim any idea of originality, and to emphasize the fact that he is simply exploiting a method which, to him, seems very valuable and which is but barely mentioned in the works of a few authors. It is not the intention to discuss the voluminous literature on this subject or to describe the various methods and appliances devised, the simple mention of which, beginning with the tieing together of the teeth, as practiced by Hypocrites, to the latest interdental splint devised by Matas, would require much space. I do not know that I can summarize more briefly and to the point than to borrow the classification of ideals aimed at in the treatment of this fracture as laid down by Matas in his paper read before the 1904 meeting of the American Surgical Association, and published in the January number of the Annals of Surgery. They are as follows:

1. To reduce the fragments accurately.
2. To maintain reduction and immobilization of the fragments until firm union is obtained.
3. To provide for the hygiene of the mouth, which suffers constantly from salivary stagnation and putrid decomposition.
4. To meet the preceding indications with the least interference with the oral and maxillary functions (feeding and speech).

I wish to announce emphatically that I do not think that in difficult cases these ideals can be obtained by any form of interdental splint or external appliance singly or in combination as yet described. I have worked for years with interdental splints of various kinds, and in difficult case have found them uniformly

unsatisfactory. I can not see how the new Matas splint can be any exception to this rule. It differs but little from the old Kingsly appliance, long tried and frequently found wanting. It is a ready-made affair in three sizes, and while the breadth of the arch of the splint can be widened and the gutter for the teeth broadened somewhat, it possesses the inherent weakness of all ready-made splints, namely, the patient must fit the splint and not the splint the patient. In a case, however, in which both the internal and external plates fitted exactly, and the fragments were hard to control, I doubt if the amount of pressure on the soft parts under the chin necessary to overcome the tendency to deformity could be comfortably borne. In fractures back of the teeth or through the rami interdental splints are clearly inefficient. In cases difficult of reduction and retention it has been my practice until the last two years to drill the body of the jaw and wire, and then use Hamilton's wedges, made of gutta-percha or modeling compound, the whole being supported by the Barton bandage in plaster of Paris. But for the space of time above mentioned I have been compelled to resort to the use of the drill but once, and that in a case of double compound fracture, with extensive loss of bone, and in this case I was compelled to further use the expedient, soon to be described, before I could maintain an arch that would give satisfactory occlusion with the upper jaw. In edentulous jaws the drill and wire is still the only expedient, and the writer has one such case so treated, in which he obtained an excellent result. To my mind, nature has furnished us, in this condition, an ever-ready splint, useful and clearly adaptable as long as the patient possesses the majority of his teeth evenly distributed. Luckily, the majority of these fractures are found in young adults, rarely in children and the aged, so that the necessary teeth are present in a large percentage of cases. Here, however, is the weak spot, and the one which emphasizes the truth that we can not treat all fractures, or, in fact, conditions of any kind along a single line. Nature's splint for fractures of the lower jaw is the upper jaw. Always present and ever ready, and the manner of using it as such I will now briefly detail. First, the instruments

and materials necessary are a light pair of wire pliers and a spool of soft iron wire, gauge 26 or 28. These are to be found in nearly every country store. My brother, Dr. D. H. Oliver, a dental surgeon, practicing in Indianapolis, has kindly tested for me the practical applicability of a whole range of wires, from iron to gold, and finds that the simple iron wire above mentioned is tougher, most malleable and stands more twisting without breaking than any other. Without attempting reduction, which is always a painful procedure, a loop of wire is thrown around the most available tooth in the lower jaw behind the break, if the break is behind the teeth, or through the ramus any one of the molars will do, a similar loop is thrown around the corresponding tooth in the upper jaw. Coming forward of the fracture, loops of wire are thrown around the first solid tooth and its fellow in the upper jaw. Going over to the other side of the jaw, a similar loop is thrown around the most available teeth, upper and lower. If possible it is best to include two teeth in each loop. These loops of wire are twisted down tight high up around the neck of the tooth, and the ends cut long enough to come well out of the mouth. When these wires are all firmly in place, the first attempt at reduction is made, and when this is satisfactorily accomplished the ends of the wires attached to the corresponding upper and lower teeth are twisted firmly together, and the ends brought out of the mouth. The above formula is easily changed to suit the locality and number of fractures. If the break is back of the teeth or through the ramus, two sets of loops, one for each side, is sufficient. If there is a fracture on both sides, not an uncommon condition, four sets of loops will be required. The lower jaw is in this manner firmly held against the upper, the teeth in their normal occlusion, and unless the wires break, which they are not likely to do if let alone, the fragments can not become separated or displaced. Merely as a safeguard and to add further steadiness, a plaster of Paris Barton's bandage is applied and carefully moulded about the jaw. In this way, I think, the first two subdivisions of our ideals of treatment, namely, "coaptation" and "immobilization," can be satisfactorily disposed of. Now, as to feeding the patient. The

extraction of a tooth was long supposed to be necessary to the successful accomplishment of this all-important function. I do not think there exists any individual in his right mind who can not readily dispose of all the fluids he wishes with his teeth tightly closed, and as liquid nourishment is all that can be handled, even with an interdental splint in situ, that problem is not worthy of further consideration. Toilet of the mouth is an important thing, and as near asepsis as it is possible to gain should be attempted. To cleanse the various nooks and crannies in any interdental appliance without removing it from the mouth is an impossibility, and this can not be done with any regularity for at least two weeks. The cleansing process is very easily and thoroughly accomplished in the method above described by filling the mouth with some antiseptic fluid and churning it backwards and forwards through the teeth several times. This should be done after each feeding and in the interim as well. It is not a difficult thing to talk with the teeth tightly closed, and the mumbling tone is more than compensated for by the accuracy of coaptation, the minimum of manipulation and resultant pain, and the certainty of a good result. So far I have kept the jaws tied together for from three to four weeks, at the end of which time I have removed the wires and continued the bandage for another week, limiting the patient to semi-solid food for at least two weeks longer. Anesthetics are to be avoided if possible, on account of the dangers incident to vomiting, and I think it best to supply the patient with a small pair of wire cutters and instruct him how to use them in case of emergency. In cases which can not be treated in this fashion, and which are difficult of reduction and retention, I am inclined to the belief, that drilling and wiring the jaw, as heretofore mentioned, is still the method of election.

DISCUSSION.

Dr. M. G. Moore, of Vincennes: Mr. President, I wish to thank the doctor for a very practical, and what seems to me, a perfect mechanical adaptation of a splint, or mode of treatment, to the fracture of the jaw. I see no possible means, by the use of

the interdental splint alone, of permitting the use of the jaw, which can perfectly approximate and perfectly hold in position the fragments following the fracture, because of the fact that the attachment of the muscles is various, extends along a considerable length of the border of the jaw, and any interdental splint will fail entirely to hold the fragments in perfect coaptation. The wiring of the teeth with a single tooth included on each side must necessarily put to much strain on the single tooth. The inclusion of two or three teeth on each side of the fracture will increase the holding power, the sustaining power of the wiring, and give a much better support to the fracture.

The matter of feeding is not the serious problem that it is commonly considered to be. If the teeth are tightly coapted, there is still a certain amount of articulation possible, and it is entirely possible to feed, even though the teeth are perfectly coapted. It is also perfectly possible to keep the mouth clean, and this method of coapting the fragments of the fractured lower jaw with the upper jaw as a splint is undoubtedly the ideal method, the ideal splint, the ideal manner of holding the fragments in coaptation. I want to thank the doctor for his paper.

Dr. J. D. McDowell, of Bedford: Mr. President, I am a little interested in this paper of the gentleman, for I recently had a case of fracture of the jaw, and I would be very glad to ask the doctor what he would do under some conditions of affairs. The class of cases that we can refer to the books and have them tell us how to set a fracture, in the absence of the gentleman who has just read the paper, are a class of cases we can get along with fairly well; but I want to ask him what he would do in a case like this: A fracture through the ramus and a fracture complicating that of the upper jaw through the antrum, complete on one side, all the way around, you understand, and on the other just simply adhering, probably one inch or possibly a little more, to hold it; then with that condition of affairs, with the upper jaw broken down and simply holding on one side, with a fracture through the ramus of the lower jaw on the other hand, such a condition as you may imagine through the antrum, that when you

put the lower jaw against the upper your patient could not possibly breathe; when you meet that condition of affairs, when you draw that lower jaw against the upper, you shut off the air from the patient's lungs, and it is impossible for him to get air through the nose, you have got to leave the mouth open to give the patient air. I simply want to ask the doctor how he would take care of that kind of a case?

Dr. H. R. Allen, of Indianapolis: Mr. President, I had no idea this was coming up at this time, but I want to refer to one point which Dr. Oliver doubtless has come across, and I think it covers the case referred to by Dr. McDowell. I had one of these cases of fracture, a mouth breather. If your teeth are all good, and you hold your nose and then try to breathe, you will find it is a difficult matter to get air through them. A patient in that position is entitled to as much air as any other patient. Your object is to give him a tube to breathe through. Let it lie right at the outside of the jaw, outside, coming in behind the teeth. The patient can then keep his mouth closed, and you can hold his jaw in splendid position, the fragments will be held up, and the case go along without trouble, excepting for one thing: Where the air comes in constantly through a tube there is a tendency to dry the mucous membrane. Don't use an ordinary rubber tube. There is no chance to vary the place where the air strikes with it. Take, rather, a large-sized catheter, so that the patient can twist it around occasionally. The air will dry out the mucous membrane where that air is coming in, and the catheter with the eye at one side of the tube will permit him, by turning the tube around a little bit, to vary the place where the air strikes; and you will find that that is something that the patient will greatly appreciate.

Dr. McDowell, of Bedford: Mr. President, I would say that in front of the first molar I had a transverse fracture complete. I found that side of the jaw, the palate and all, turned around in the mouth. I tried to wire that upper jaw, but could not hold it in place.

Dr. H. R. Allen, of Indianapolis: Did you try a tube in his mouth?

Dr. J. D. McDowell, of Bedford: No, sir, I did not.

Dr. H. R. Allen, of Indianapolis: You had a very profound fracture.

Dr. E. D. Clark, of Indianapolis: Mr. President, I am very much interested in Dr. Oliver's paper, and I am sure that in the class of cases he has indicated it will be an ideal method of treatment. I have used in a number of my cases the interdental splint. I believe that where you have bad teeth, especially where you have teeth that are loose, the interdental splint is the proper way to treat them. I have had little or no trouble with the interdental splint. I have them made by a dentist, a hard, vulcanized rubber splint, and see that it is vulcanized and hard, and polished with a great deal of care, so that it can be kept thoroughly clean, and then I bind the jaws to this interdental splint. But I believe where you can hold the teeth in close apposition by means of iron wire, that it is far preferable to an interdental splint. The matter of cleansing the mouth is of great importance, because a great many of these cases are compound, and it is important, as in all compound fractures, to keep the mouth perfectly clean. As the doctor said, in certain of these cases I think it is absolutely necessary to wire. I believe it is necessary to wire in the majority of cases where you have a fracture back of the second molar tooth. I have had difficulty, and it has been of importance in most of my cases to control the lower fragment in that case. I think the doctor's paper is very practical, and will serve a good purpose.

Dr. J. H. Ford, of Indianapolis: Mr. President, I have nothing to say except commendation of the doctor's paper. All the doctor claims for his paper, for his suggestion, is that it is a good thing in those cases to which it is adapted. It will not cover all cases. No one apparatus will. I think it is an ideal procedure. It is simplicity itself, and the only thing I am looking for is a case of

fracture of the jaw, in order that I may try it. I haven't had one for some time. The first one I get my hands on I am going to give the doctor's scheme a thorough trying out. Of course, it will not meet all indications. No apparatus will. It is cleanly, it is simple, and it meets the indications. I do not see what more you want. I have very little fear of pulling the teeth out. I know it is hard work to have it done, and it is hard work to do; and I haven't any fear of pulling the teeth out in any case, because the strain of the muscles is all inward and not outward. The tendency is to pull the jaw upwards, so I have no fear of pulling the teeth out. I think as far as the lateral motion is concerned, if they are coapted closely, as they generally are, there would not be much displacement.

Dr. David Ross, of Indianapolis: Mr. President, certainly one thing that commends the apparatus is its simplicity; the little that is necessary to do in order to fix the jaw. The great objection to the interdental splint is that it requires more or less fixture, more or less ingenuity to arrange it. Some are very difficult to get in place; and if this appliance of the doctor's answered for nothing more than a temporary dressing it would certainly be a great deal added to our manner of treating fractures of the lower jaw. No one method will cover every case; it is impossible that that should be so; but certainly we are indebted to Dr. Oliver for this simple method of treating fractures of the lower jaw where it is applicable.

Dr. J. H. Oliver, closing: Mr. President, in relation to Dr. McDonald's case and its treatment, will say that the surgeon always has to meet emergencies as they arise. I usually use the lower jaw as a splint for fracture of the upper jaw, and wire the lower jaw to the upper in such cases if occasion demands. If the upper and lower jaw both were broken I think I would wire the body of the lower jaw and then wire the teeth to the upper jaw as described above.

Dr. Allen's device for aiding respiration by passing a tube behind the molar teeth seems practical. I would not hesitate, how-

ever, to extract a tooth in such emergency if the tube did not give the desired results. The advantage of the method for treating fractures of the lower jaw, which I have just described, lies in its simplicity and in that it does away with frequent manipulation, and the resulting pain and irritation thereby produced. In simple cases an interdental splint will do very well, but in cases that are hard of retention I have never found them satisfactory. In difficult cases, however, I have not found as yet a single case in which the method of wiring, which I have described, has failed me. I thank you.

THE TONSILS, OR A PLEA FOR TONSILLECTOMY.

BY DAVID W. STEVENSON, M. D., OF RICHMOND, IND.

The gastrointestinal tract is about 26 feet in length. There are four locations in the same that are of a special danger to the human economy. These are, first, the tonsils, the portal for entrance of more germs to the vascular system of the body than any other; second, the stomach, with its ulcers, many of which are never diagnosed; third, the gall-bladder, with its common duct; and, fourth, the appendix.

What surgeon is there, who, looking down this long avenue, will dispute the probability that the control of the tonsil portal will yet prove to be the most important of them all to the health? Modern surgeons now state that appendicitis generally comes from germs carried by the vascular system, and not to the entrance of cherry stones and other seeds, as was formerly thought. Cholecystitis, with its resulting complication, gallstones, is also supposed to be due to an infection. Many germs from the teeth and tonsils are destroyed by the gastric juice; but enough remains to cause at times ulcers which, in their chronic forms, may lead to stomach enlargement and various dyspepsias.

The Mayo brothers, of Rochester, are making a world-wide reputation by performing gastro-enterostomy on hundreds of these old dyspeptics, thus providing free drainage for their soured stomach contents. Moreover, ulcers of the stomach may also arise from vascular infections.

The tonsils are a part of the Waldeyer-lymphatic ring, the adenoids and the lingual tonsils completing the circle. They lie at the crossroad of the alimentary and respiratory tracts, very close to the teeth, in the mouth which contains more dangerous germs than any other part of the human body. Weichlesbaum states that tonsils removed from children and animals have produced tuberculosis in inoculation experiments.

The tonsil is merely a large lymphatic gland. If the lymphatic system only contained a colored fluid, the doctor would be more impressed with its great extent. In cases of scrofula, large numbers of lymphatic glands may be removed from the neck with no inconvenience, but even with benefit to the patient. It would have been better for the race if in its evolution the tonsil had entirely disappeared or else had been placed under the skin, instead of near the mucous membrane. We are apt to forget that all lymphatic glands have efferent as well as afferent branches, which enter its capsules. These efferent channels in the tonsil are ever ready to carry germs to the vascular centers of the body.

There is a considerable percentage of people who have no tonsils, while in the aged they are absent, and my opinion is that the tonsil is of no more importance to the human economy than are whiskers, the lobes of the ear, the appendix, or an ingrowing toe nail. It is believed by some authors that in time the race will lose the small toe. In Eastern countries the finger nails are sometimes so carefully guarded by silver shields that they grow ten inches long, these long nails being a fitting emblem of an unpractical man.

The tonsil is of an almond shape, its greatest length vertical. The width and depth are about equal, which is only about one-half the height. It is bounded laterally by the anterior and posterior pillars, the palatoglossos and palatopharyngeus, which have but a small amount of muscle tissue in them.

The plicatriangularis is a mucous membrane which largely covers the superior and anterior angle of the tonsil. It covers the supratonsillar fossa, the chief danger point in the tonsil, and the origin of nearly all quinsies. There are very wide variations in its attachments. It may partly surround the tonsil. It may cover full three-fourths of the tonsil; as what appears to the superficial observer to be the tonsil may be only the posterior inferior end of the gland. It often requires small, bloody operations to see the boundaries of the tonsil, so that frequently the patient may imagine the tonsil has been removed before you have seen even the outlines. It is often necessary to sacrifice a large area of the

adherent plica membrane before the supratonsilar fossa becomes visible. The so-called buried tonsil is common, and causes as much disease as any, so long as the spaces between the pillars and tonsils act as retention sewers.

Owing to a repeated inflammation and infection that nearly all tonsils undergo, there are generally many adhesions between the tonsils, the pillars and the plica triangularis. There are millions of variations in the forms of these adhesions, no two tonsils being alike in this regard.

There are about a dozen crypts in each tonsil. These may well be compared to test tubes in which cultures of the most virulent germs are made. All bacilli from the teeth and mouth and accessory sinus often have free entrances to these tubes. These crypts are often tortuous in their average length of one-half inch, their mouth often becoming contracted from inflammation, thus forming veritable sacs, in which foul plugs are formed and retained. These may eventually partake of the nature of cholesteatomatous masses.

The so-called follicular tonsilitis is really a cryptic or lacunar inflammation. A rather rare chronic disease caused by a fungus growth, the leptothrix, generally originates in these tubes and is exceedingly hard to curb unless a tonsillectomy is performed. I recall nine cases of this pharyngomycosis treated during the past year.

Since the lymph stream from the tonsil is so soon and easily transferred to the heart, and as the crypts furnish the ideal culture-bed with the required heat and moisture, it is easy to understand how so many infections originate in the tonsil.

Acute rheumatism means acute septicemia, which causes more heart disease than all other diseases combined. In my opinion, 80 per cent. of acute rheumatism must be attributed to the tonsil as the point of origin, and without the tonsil there would be little diphtheria, and without the tonsil there would be less rheumatism. In regard to chronic rheumatism with slight fever and all allied troubles, I can only ask any conscientious physician to have a complete enucleation made of the tonsils in his next dozen cases of

these troubles, and the report will undobutedly be that the large majority are completely cured. Many cases of anemia and allied nutritive disorders would disappear if tonsillectomies were performed in these cases having pus absorption from the glands.

Our remedy, then, is tonsillectomy, and not a tonsillotomy. Treatment with caustics, antiseptics and even the electric cautery are to be advised against, and they are not sure remedies. Cauterizing the crypts may only tend to enlarge the openings, so that more germs may have access or they may warp and change the canal so that retention plugs are more apt to occur.

Tonsillectomy is as difficult an operation as appendectomy. Moreover, there is just as much responsibility to carry in this as in any operation. Hemorrhage must be controlled at times under difficult circumstances.

Local anesthesia will permit of the complete removal of tonsils with but slight pain in a large majority of adults. Attention may be drawn to the following essentials in the operation:

First. The tonsillotome must be very sharp if it is used. I sharpen mine each time it is applied. It is generally best to remove a large portion of the plica, and the pillars ought not to be torn by dull instruments. The tonsillotome is seldom suitable for adult cases. The portions of the tonsil not completely removed by the operation must be excised with such instruments as scissors, snare or biting forceps until there is nothing left but the capsule bed. Many glands have lobes, and if there is a pedunculated tonsil extending down the throat, the instrument must be well extended under the lobe to get every portion.

Second. The jaws must be well held apart by a good mouth gag. This often tends to waken the patient if he is not under a deep anesthesia.

Third. The tongue must be well kept out of the way.

Fourth. The adhesions between the pillars must be completely broken up.

The fifth step may be the quick removal of blood and mucous, so as to enable good vision on the parts. Just here I must state that several assistants are of great advantage, as one of them can

hold a powerful light on the field of operation, following the patient if there is any movement; enabling every part of the operation to be done rapidly as well as thoroughly.

The sixth is the complete removal of the tonsil. There was a time when a physician would use only one instrument to pull any and all teeth. Lacerated gums and fractured jaws were common, for which the patient only was to blame, because of having such crooked teeth; but today on both the teeth and tonsils many instruments are used, of varied sizes to meet all conditions. Some operators will use certain instruments more than others, but the best work can be done only with a good variety of the latest and best, suitable to the case in hand.

The object of this paper is to emphasize the fact that the continuous absorption of germs and ptomaines from the tonsil portal is a most serious condition, which generally demands a tonsillectomy for its removal.

DISCUSSION.

Dr. L. C. Cline, of Indianapolis: Mr. President and gentlemen, the doctor has brought before us a very practical and interesting subject to all practitioners of medicine, because it is something that we all who practice medicine come in contact with. Tonsillitis and disturbances that come from the inflammations and infections from the tonsils are very numerous. In fact, they make up a large per cent. of the practitioner's business. If you will stop and think for a moment, the cases that he is called upon to treat are directly or indirectly connected with some infection of the tonsils or the adenoid belt, as we call it, which includes the third tonsil, the nasopharynx and the tongue, which all belong to the same group. The doctor has said that the source of infection is very great. That I believe to be true, on account of the great number of crypts that we find in the tonsil, eight or fourteen sometimes, and in some there are as high as twenty. These crypts in the tonsil are flask-shaped, with a small opening; they are lined with mucous membrane, the same as on the outside, and they are, as the doctor properly called them, culture-tubes. They have every condition present for the cultivation of germs. We know

when we cultivate germs we have got to have heat. That we have. We have got to have air, oxygen, and we have got to have moisture, and we have got to have a dark place to make these germs grow nicely; and we have all these requirements in this region, as well as in the sinuses about the nose; so that we have a perfect field here, or perfect conditions almost, for the development of germs that accumulate in the mouth, and there is a great variety of them that we know do accumulate in the mouth.

Now, what I have to say will be more particularly with reference to the methods of dealing with these things. My greatest difficulty has been, in the fifteen years, probably, that I have been engaged actively in this line of work, to make my patrons, or the people, the laity, understand what we mean by tonsils. They will ask you what is the use removing the tonsils? Why do you cut them out? They certainly have some function or use. They do not understand what we mean. I use this illustration with my patients sometimes. I say, "Suppose you have a wart on the back of your hand. It has no business there; it is simply foreign, and it ought to be removed." They will all agree to that. Then I say the tonsils are similar to the wart; it is in the same pathological condition. I do not believe a tonsil ought to be removed when it is in a healthy condition; and in a healthy condition we do not see the tonsil. We simply see the pillars, and possibly the edge of the tonsil, in its normal condition; consequently, we have no business interfering with that, any more than we have with the big toe nail in a normal condition. It is the hypertrophied tonsil we deal with. In order to get rid of these culture tubes we must remove them in some way, and the point is, how shall we do it? Shall we undertake to clean out that tonsil entire, or shall we take off the diseased structure, or how shall we leave it? Some will tell you we must remove every vestige of the tonsil. I want to say to you it is a difficult thing to do, in the average case, or in a great number of cases that may come along; it is a difficult thing to remove every vestige of the tonsil, because it is embedded down in the tissues, in between the pillars, and goes down deeply in a great many cases.

Dr. John F. Barnhill, of Indianapolis: Mr. President, I think I missed hearing most of the paper, but I infer from the title its contents. There are two very distinct reasons for removing the tonsils; one is when they are greatly enlarged and cause an obstruction to the breathing during the day or night, and the other is the diseased condition of a moderately enlarged tonsil, the diseased crypts. The first condition is commonly found in the child, and the second condition usually in the adult. The removal of the tonsil in a child when it is soft, and when it protrudes from the pillars, is a very simple matter; and the tonsils can both be removed, I should say, in an ordinary case in five or six seconds, with the ordinary tonsillotome. It should be understood by all who do this work that in the adult we have an entirely different condition, pathologically, and every other way. In such cases it is usually folly to depend upon a tonsillotome, because the tonsil can not be sufficiently well removed to cure the condition for which the operation is done, and the patient is disappointed; and it is that class of individuals that go around saying, "I had my tonsils removed, and have been worse ever since." We remove that sort of tonsil in order to get rid of the crypts, and for no other reason. Any operation which does not completely eradicate all the crypts will be a failure. The principle is therefore plain, and any instrument which fails to follow that surgical principle will not be available in this particular instance. The snare has been to me an instrument which can not be improved upon. The tonsil is first dissected loose from its pillars, and from the supratonsillar fossa, and the gland is then drawn firmly out with the tenaculum, and the entire gland is snared away. I believe it is not necessary to take away all the gland, provided all the crypts are included. It is wise in all cases where this operation is undertaken to include as much of the gland as is possible, because we can not tell from the appearance of the surface how deeply these crypts go, and it should be our intention to cure the individual who applies to us for relief.

I know of no more satisfactory operation than the operation for chronic tonsillitis, or for the cure of quinsy, than this operation.

It will certainly cure quinsy. It will certainly cure chronic tonsillitis. But it must be accurately performed.

I presume the essayist entered into some of the general symptoms which require this operation. There are many cases which are said to be muscular rheumatism, particularly as it effects the muscles of the neck and shoulder and the arm, that can be absolutely cured by the thorough removal of all these crypts. After attention to the tonsil is quite as necessary, when the entire operation first has been performed, as the operation itself. If great care is not taken to prevent adhesion of the pillars of the pharynges to each other after the operation has been performed, the space is so obliterated that there is, in some instances, a feeling of fullness about the throat afterward, a feeling of discomfort and an unsatisfactory condition of the patient.

Dr. L. F. Page, of Indianapolis: Mr. President, I did not have the pleasure of hearing all of this paper. I suppose it is useless to argue the question before this audience at this day as to the necessity of removing the tonsils, at least in those cases where they should be removed because of great hypertrophy, and those cases of follicular tonsillitis, where there is no question about their being the fountain of all sorts of infection, producing probably rheumatism and tuberculosis. It has been demonstrated in a number of cases of tuberculosis that the tubercular germ gained entrance through the tonsilar crypt. As to the other point, it seems to me the greatest dread we have is the hemorrhage that results from the removal of the tonsil. In a very large percentage of cases that hemorrhage does not amount to anything, but there is a small percentage of cases in which the hemorrhage is very trying. I suppose every one has some of this sort of experience. There are blood-vessels emerging from the walls of the throat there that the eye can not find in order to ligate them, so that it is often very trying to stop this hemorrhage; and the method of doing it is a question that has never been satisfactorily settled. The snare is a good means of removing the tonsil, the tonsillotome is a good means of removing it; so that we get it all out it don't matter by what means it is done. In one

man's hands the snare is the best, and in another the tonsillotome does well. I do not indorse the method of removing them with electro cautery, but for the relief of the hemorrhage I have had to resort to all sorts of methods. The tonsillar hemostat is probably the best means that we have of relieving these hemorrhages. I am in the habit of spraying where I suspect a case, especially in the case of an adult, with an adrenilin solution and applying cocaine by injection, and after the removal of the tonsil the hemorrhage that results is not important. It is not in the true sense secondary, a hemorrhage that comes on usually four or five hours after the effect of the adrenilin has entirely disappeared. I have found by painting those cases with a strong solution of nitrate of silver that I can control the hemorrhage. Some use chromic acid, but I have found nitrate of silver acts better than chromic acid. This has been in my hands a very efficient remedy to relieve this hemorrhage. The tonsillar hemostat is of German make. This is an instrument which clamps the artery on the the outside. There is a disc pressing over the artery on the outside, and a piece of rubber fastened on the inside, and we clamp anl hold the artery in that way. This is a very efficient means, and is used a great deal.

Dr. D. W. Stevenson, of Richmond: Mr. President, I want to thank the members for their discussion of my paper. There is not much to add. I might merely say that I agree with nearly all the speakers in everything that they have said. Dr. Barnhill stated it was necessary to remove the crypts. He is right in that, but besides that it is necessary to remove two other thing, at least, that is, if there is any substance between the pillars and the tonsil, that must be removed, and if the supratonsil fossa is present. anything that covers it, it ought to be removed, so that absolutely everything is free and open; so that after the operation is thoroughly healed up the tonsillar region will look just like the roof of the mouth. That is the ideal condition to leave the parts in. In doing the operation I think it is also well to keep the patient on the back, not only for the time you are doing the operation, but for five or six hours, and you will have but little hemorrhage; for if the heart is quiet there will be little or no hemorrhage.

THE RATIONAL TREATMENT OF HERNIA.

BY JOSEPH RILUS EASTMAN, M. D., INDIANAPOLIS.

That a properly adjusted truss provides a certain degree of comfort and relative security against strangulation in most cases of inguinal hernia can not be denied. It is no less true, however, that any patient at any age with inguinal hernia of any size is constantly exposed to some danger of strangulation. Moreover, the wearing of a truss is never quite agreeable, and, in summer, owing to excoriation of the skin, may be very annoying, and is sometimes painful. Individuals depending upon a truss to close the external abdominal ring can never enjoy that sense of security and strength which intact abdominal coverings provide. The chief argument against the truss is, however, that so long as it must be worn the danger of fatal strangulation hangs over the afflicted individual like the Damoclesean sword. There is no age limit beyond which the radical operation for the cure of inguinal hernia may not be made. Great physical decrepitude, which may come with old age, should, however, be regarded as a contraindication to the radical operation. To one merely old, however, the relief of radical cure need not be denied.

It is in children that truss treatment as a routine practice may be seriously considered, since perhaps two-thirds of all cases of inguinal hernia in children under four years of age get well under treatment by the truss. This, however, in the very large majority of such cases, should be regarded as spontaneous cure and not as truss cure. The best that can be said in behalf of the truss in such cases is that it arrests the descent of the hernia at the external abdominal ring, thus preventing an increase in the size of this opening, and, in addition, protecting the individual, no doubt, to some degree against strangulation. It should be noted, however, that a large number of surgeons, both in this country and abroad, are now advocating operation as the primary method

of treatment in infants. Coley, who advocates truss treatment in children, enumerates the following important exceptions. He says:

First. If there is a history of strangulation that has become reduced by taxis, I believe that an operation is indicated, no matter how young the child.

Second. In cases in which, despite carefully directed truss treatment, the hernia has become irreducible, I think early operation should be advised.

Third. In cases in which the rupture can not be controlled by a truss, and, as a consequence, is gradually increasing in size.

Fourth. In all cases of femoral hernia, the reason for prompt operation in this class being that a cure by persistent truss treatment is practically unknown at any age.

Fifth. Immediate operation is indicated in all cases of hernia associated with reducible hydrocele or fluid in the hernial sac, inasmuch as it is impossible to control the rupture by means of a truss, and there is, hence, nothing to be gained by waiting.

With the development of aseptic surgical technic, the radical cure of irreducible hernia has become so safe that it is not easy to understand why any surgeon should oppose operation at any age, except in those cases in which unusual physical weakness positively contraindicates any operation, however slight. In other words, it is not easy to understand why any conditions other than those which would contraindicate any surgical operation of the same slight degree of severity should be held to contraindicate the radical operation for hernia. Recurrences are extremely rare, and fatal terminations almost unknown after interval operations. Years ago Desault said: "You can always look for success in a hernia which has not been tampered with before operation."

In children, unless the hernia be quite large, the principle applied by Dr. Ochsner in femoral hernia may be followed with perfect safety; that is, the operation should consist simply in carefully dissecting out the sac, ligating it as high up as is possible, cutting away the sac and permitting the stump to retract through the internal ring and closing the wound in the skin, with no attempt whatever to reduce the size of the external abdominal

ring or deal with muscles or fascia. Indeed, in cases of small hernia in adults it is doubtful whether simple ligation and removal of the sac will not nearly always suffice to effect a cure. The step of introducing buried sutures to narrow the external ring may well be omitted in many small inguinal hernias of adults, and with perfect safety. This applies only to those hernias in which there is little or no deformity or disarrangement of the muscle layers. Such cases as this, however, are not so rare as might be imagined. It is well known that almost any method or any surgeon, if cleanliness be observed and the sac completely removed, will suffice for the cure of small inguinal hernias.

The preparation of the patient for the radical operation for hernia should differ in no way from that of patients about to undergo other serious operations, with the exception that such patients as are very fat should, as has been recommended by Ochsner, be placed, if possible, upon a systematic course of treatment for the reduction of this fat before the operation is performed.

Various lines of incision have been presented for the exposure of the parts concerned in inguinal hernia, but, after all, what is desired is that the incision be so placed and sufficient in length to expose freely and readily the site of the internal and external abdominal rings. After the skin and superficial fat are divided, the few vessels, chiefly veins, should be clamped and cut between artery forceps. A large area of the aponeurosis of the obliquis externus muscle may now be exposed by gauze dissection. There need be no hemorrhage at all during this procedure. The external oblique fascia is divided parallel to its fibers and freed by blunt gauze dissection from the tissues beneath for about an inch from the cut edges. The border of the obliquis internus, the sac of the hernia and the cord covered at the lower angle by the cremaster muscle are thus exposed. The index finger may now be passed under the cord and sac distal to the external abdominal ring and elevated so that with gauze the cord may be wiped away from the sac. There is no easier and surer way to separate cord and sac than to do this by wiping, so to speak, the cord away from the sac and occasionally clipping with the scissors such thin webs of fascia as may be developed as one proceeds with such

gauze dissection. When the sac is entirely freed, to the highest possible point, it should be freely opened, and if the reduction of contents may be facilitated by so doing, the sac should be split clear to the neck. After the reduction of devitalized contents, or removal, as may be necessary, the sac may be conveniently ligated at the highest point by twisting it to a slender stalk. As this twisting is executed, intestine and omentum are forced out and are prevented from slipping into the neck, to be caught in the transfixing needle. By this twisting of the sac, all of the slack of the peritoneum is taken up, so that when the ligature is applied and the sac cut away, the stump springs back through the internal ring, leaving no pocket to favor a recurrence. If a distinct varicocele exist, it will always be advisable to excise at least a part of the veins of the cord.

As to the transplantation of the cord, it seems to be a matter of relatively little importance whether it is transplanted or not. Surgeons seem more and more inclined not to transplant it. In somewhat more than one hundred Bassini operations for inguinal hernia I transplanted the cord, and had no reason to regret it, but lately have not transplanted the cord, and have had results as good as in those in which the cord was transplanted. The method of drawing the internal oblique abdominal muscle and transversalis to the ledge on the under surface of Poupart's ligament over the cord closes the inguinal canal firmly and permanently, and leaves the tissues of the spermatic cord undisturbed.

In an examination of twenty-nine male and twenty-five female normal adult cadavers Drs. A. H. Ferguson and R. C. Turck, of Chicago, finding the average length of attachment of the internal oblique to Poupart's ligament to embrace the outer two-thirds of the ligament, stated their belief that a smaller extent of attachment greatly favored the development of an oblique inguinal hernia through taking away one of the anterior supports of the internal abdominal ring. Most anatomists, for example, Gray, Henle and Eisendrath, found the internal oblique to be normally attached to the upper half of Poupart's ligament only. However this may be, Dr. Ferguson's observations in this direction led him to develop his so-called anatomic operation of attaching the in-

ternal oblique to Poupart's ligament over the cord, leaving the cord untorn from its bed upon the transversalis fascia, and, at any rate, the practice of Ferguson's operation has convinced many that it makes very little difference whether the cord is transplanted or not, and thus this apparently unnecessary step has been quite generally dropped.

Dr. Ferguson originally used a running suture of carbolized catgut to unite the internal oblique to the ledge under Poupart's ligament. He also used a running suture of such catgut to close the slit in the aponeurosis of the external oblique. Most surgeons, however, who employ the Ferguson method, use interrupted sutures of chromic or iodized catgut. It will be seen that the Ferguson operation aims to restore normal anatomic conditions by the union of the internal oblique and transversalis to Poupart's ligament in front of the cord.

The original Bassini operation, as is well known, sought to strengthen the naturally weak posterior wall of the inguinal canal by suturing the internal oblique and transversalis muscles to the inner aspect of Poupart's ligament behind the cord.

Coley reduced the space left at the upper angle of the wound for the passage of the cord and its vessels by inserting a suture above the cord, thus slightly modifying the original method.

In the so-called imbrication, or lap-joint, operation of Dr. E. Willis Andrews, a third layer is added to those which are placed behind the cord by the Bassini method; that is, with kangaroo tendon mattress sutures the inner portion of the external oblique aponeurosis, internal oblique and transversalis are all drawn deeply under Poupart's ligament, while the cord is held up. The cord is now dropped upon the fascia of the external oblique, and Poupart's ligament is sutured over it so that the cord now lies in a new inguinal canal, whose posterior wall has three layers, one of which is the powerful aponeurosis. Its anterior wall is composed of one layer of the same strong character. The Andrews operation is strongly advocated for use in cases of large hernia of long duration, where there is marked muscular defect and a large internal ring. Halsted originally sewed all layers, including the external oblique, to Poupart's ligament behind the cord, but

placed no protecting fascia in front of the cord, and funiculitis was a common sequela. The present Halsted operation, in use at the Johns Hopkins Hospital, leaves the cord in its bed. The veins are ligated when large and the vein stump dropped back. The suture with which the hernia sac is ligated is carried far out under the internal oblique muscle, passed through this muscle and tied. The cremaster muscle is now drawn with mattress sutures of black silk to the posterior surface of the internal oblique. The edge of the internal oblique as well as the anterior sheath of the rectus at the lower angle is now drawn under Poupart's ligament with similar sutures, and, lastly, the external oblique edges are overlapped, as in the Andrews operation. It will be seen that Halsted buries black silk. He claims that black silk is more readily seen against the tissues than white silk. It is also claimed that the aseptic technic at Johns Hopkins Hospital is such that it has not been found necessary to remove these sutures. Halsted closes the skin wound with a subcuticular silver wire stitch and applies a silver foil dressing. To secure immobility, the patient is placed in a plaster of Paris cast, extending from the umbilicus to the knee on the involved side. This elaborate method of suture used by Halsted appeals to most surgeons as unnecessary, excepting in very unusual cases, a more simple suture being efficient in almost all cases of inguinal hernia.

By the use of McArthur's autoplastic suture, which suture represents simply a narrow ribbon of the aponeurosis of the external oblique split off from each side of the wound, and with which almost any method of closing may be followed, it is unnecessary to introduce any foreign material whatever deeply into the wound. This operation is not quite so easy of execution as most others, and it is, perhaps, for this reason that it has not been more generally adopted.

As before stated, those who employ the Andrews modification of the Bassini operation regard it as ideal in cases with large ring and extensive muscular defect. The advantages of overlapping the aponeurotic and muscular structures are, according to Eisendrath, that the former, while elastic, possess great strength and are not so likely to pull away from Poupart's ligament. It is

claimed, also, for this operation that the sutures placed just above and below the cord enable one to so decrease the size of the large internal ring that it becomes unnecessary to resect the veins unless they are very much enlarged. The reinforcing of the internal ring, however, should perhaps not be regarded as peculiar to any method, as presumably everybody does this if it is found necessary.

In closing the external ring, likewise, no doubt in cases of defective or small conjoined tendon the sheath of the rectus muscle or even the belly of the muscle itself has been long drawn over by surgeons to fill in this defect. Bloodgood, however, now systematically exposes the sheath of the rectus by retracting upward and inward the aponeurosis of the external and internal oblique muscles. The sheath is incised for a distance of five centimeters upward and outward from the symphysis. The muscular fibers are then sutured to Poupart's ligament. The writer has never practiced this modification, but has frequently simply drawn the sheath of the rectus over to Poupart's ligament, believing that it is the fascia which gives to the abdominal wall the strength to contain the abdominal viscera, while the muscle itself really only provides elasticity and motility. Muscle belly is frequently found forming part of the hernial contents; fascia, never.

Everywhere surgeons are beginning to realize the importance of getting patients out of bed much more promptly than has heretofore been regarded as safe or desirable. While this may be in the main true of surgical operations generally, in case of plastic operations, like the radical operation for hernia, it is not wise to have the patient up before tolerably firm union is established, which means not earlier than the fourteenth day, as a rule. Every movement of the limb must to some extent disturb or displace the parts included in the sutures, and this is especially true of the aponeurosis. This layer being continuous all over the abdomen, groin and thigh, and the slit at the hernia representing simply a break in the contiguity of this extensive and important layer, it will be seen that movements of the trunk or limbs may do considerable damage.

When recurrence presents itself after operation for hernia, it

will usually be found that faulty asepsis is responsible for the accident. Since rubber gloves have been used, the percentage of recurrence has been lowered in the experince of nearly every operator who has dealt with a large number of cases. No matter what the method, hernia will not often recur if the operative technic has been aseptic. Very often the break in the chain of asepsis has come because of the introduction of nonaseptic absorbable sutures. An absorbable suture is never more than relatively aseptic, which means that it is not aseptic at all. On the other hand, the burying of nonabsorbable sutures is fraught with some danger, so that, aside from Halsted, who uses the black silk, and Phelps, who buries silver wire filagree, and Harris, who uses silver wire, introduced in such a way that it may be removed after union has taken place, very few operators are willing to trust to nonabsorbable sutures.

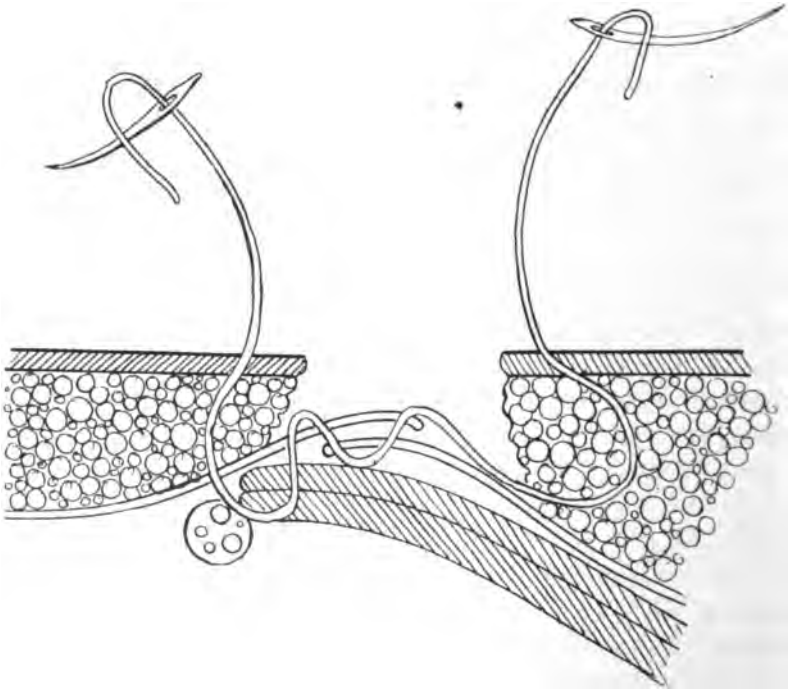


Diagram showing manner of introducing single tier suture for Ferguson's anatomic coaptation of layers. Internal oblique is drawn and held under the ledge of Poupart's ligament, and edges of slit in aponeurosis of external oblique are overlapped with linen suture which also closes skin wound.

Upon the accompanying cut is represented a method of introducing a single tier of nonabsorbable sutures which may coapt all layers, either according to the Ferguson or Bassini methods, and which may be removed after union has taken place. Any sort of suture material may be used for this purpose, as silver wire, silk, silkworm gut or linen. The writer has used Paegnstecher celloidin in making this operation in seven cases. It should be understood that nothing whatever is claimed for the method except that the layers may be readily and securely coapted in this manner by a single tier of removable sutures in all except very large hernias. There is no apparent reason why the ultimate results should not be good. However, only time and much experience can determine this.

DISCUSSION.

Dr. David Ross, of Indianapolis: Mr. President, certainly Dr. Eastman has given us a most excellent paper on this most important subject. I am glad that he chose the title that he did for his paper, "The Rational Treatment of Hernia," although he afterwards speaks of it as a radical operation. I think oftentimes the term radical operation has frightened us when it had no business to do so. We are either afraid of being radical for fear we may be considered overzealous, too enthusiastic on our hobby, or, if we pride ourselves in it, possibly we go too far; but certainly as we understand the term radical operation, the rational operation is always the conservative operation, because there is no question but what it more conserves now the life of the patient than any other method. The doctor speaks of the truss treatment, particularly in regard to children, and says rightly that the cures that come from its use are simple cures that are made possible by its use. They prevent the descent of the hernia, because in the child we have such an anatomical condition that the external and internal rings are virtually opposite, growth bringing about change in this relationship, so that we have the canal developing later on; so that if by the truss we can retain the hernia in place we will, through time, get a cure in children;

and I think that a case of recent hernia is the only one where the truss has any business to be used. Of course we realize the fact that the decision rests on the patients themselves; but so far as the advice of the surgeon goes there is only one kind of advice to be given, and that is for an operation wherever there is hernia established, that is where it is thoroughly established in the adult. In the child of course the truss, for the reasons that may be given, may be used successfully; but I do not believe that even in children, in the majority of cases, the truss treatment is the best treatment by any means. Personally, I have had better success with other methods because of the irresponsibility of the child, because of the fact that the average parent does not know how, even after being instructed, to rightly replace the truss from time to time, and you will go back time after time and find the little one with the hernia descended and the truss thrown away, and the complaint made that the child objected to wearing it, and so they took it off; and yet every time that hernia descends we have lost that much in its treatment, if the cure is to be effected by this means.

The doctor mentions the operation in the child being a simpler operation. Of course in those cases we have the hernia smaller, it having existed naturally a short time, and the tissues and the readiness with which the tissues readjust themselves makes it possible to get, I think, better results in the child than later on after the tissues have become indurated and we have more or less cicatricial tissue present, and there is certainly nothing more inimical to the desirable result than that we get cicatricial tissue in a mass; and any form of treatment that brings about a cicatricial mass in the seat of the operation is going to lessen the chances very materially for a permanent cure of the hernia.

Dr. Miles F. Porter, of Fort Wayne: Mr. President, I enjoyed Dr. Eastman's paper very much. I think it is a most excellent paper, and I have no fault to find with any of the doctrines therein expressed. I think the best lesson perhaps that his paper teaches, if I get the drift of it—and if it don't teach that I would disagree with what he said—and that is that there is no method

yet devised that is the best method to apply to the radical treatment of all cases of hernia. The Bassini method is good and applicable to a large number of cases. The modified Bassini method is applicable to a number of cases. There are other cases in which other methods are better. In other words, he will succeed best who applies to each case that method which adapts itself to the case in hand. Let me illustrate. Suppose it is a direct hernia. You have an opening straight through from behind forward. There is no weakness at the internal ring. It perhaps is a good plan, in a case of that kind, to take that cord out of the external ring, lay it on top of the external oblique fascia and make this weak place strong. Again, if it is an oblique hernia and if the sac first is felt that you find in the external muscles, and if you want to make assurance doubly sure here, you want to get the cord out of the way there; drop it down, if you please, and let it come under the perineum until it comes to the external ring, and take it up here. That is the best method to use in some cases. If the muscular layers and the tissue layers, and I should say, perhaps, the layer fascia, for I quite agree with Dr. Eastman that it is not the muscles but the layer of fascia; but if these muscular layers are thin and liable to stretch or tear, and the fibres are liable to separate, then the sheath must be used, for you must borrow tissue from some place to make these tissues strong. On the other hand, if these edges can be brought actively together by strong tissue no embrocation is needed at all.

Now one word in regard to the character of the suture. The suture is a necessary evil. We ought to get along without it if we can, and if we can not get along without it, then we ought to use that which is the least evil. I believe we find this in the absorbable suture. I have used, in quite a number of cases, ordinary sterilized catgut with quite as much success as chromicized catgut.

J. Rilus Eastman, of Indianapolis: Mr. President, I have nothing to say in closing the discussion except that I agree with Dr. Porter that a suture is a necessary evil, and if a suture is a necessary evil then a buried suture is a still greater

evil. If we must leave the suture in to be absorbed it becomes a greater evil. The suture is an evil because of its liability to infection; and if we can use a single suture we do away in some degree with this evil. I have encountered cases in which it was not possible to draw over the edge of the conjoined tendon, or the edge of the internal oblique in this way; that is we did not feel safe to apply this method, and with the linen sutures all prepared for use we went back to the old method, and did as we were accustomed to do before; but in the majority of cases, I believe in ten cases out of a dozen, we can use this method of closing the wound in hernia. We can close it just as securely as with the buried suture, and do away with what I think every one concedes is a great evil, that is leaving in buried sutures, either absorbable or nonabsorbable sutures.

FRACTURES OF THE PATELLA.

BY J. H. FORD, M. D., OF INDIANAPOLIS, IND.

Fractures of the patella are divided into three classes: Those due to indirect violence; those due to direct violence; and those due to a combination of both. Fractures due to indirect violence are almost invariably transverse and usually the fragments are more or less widely separted, while those due to direct violence may be be transverse, vertical, oblique, stellar or multiplex.

The treatment of these conditions consists of two methods: Operative and palliative. In palliative cases, the objects to be attained are coaptation of the fragments, reduction of tumefaction, and restoration of function.

I will not try to describe, as time does not allow, the many methods described and used by enthusiastic inventors and their followers, but detail the methods which appeal to the writer.

In palliative treatment the apposition or approximation of the fragments is best attained by the relaxation of the quadriceps extension. This may be obtained by putting the patient in bed in a half-sitting position or by letting him lie prone and elevating the limb until relaxaton occurs.

The tumefaction can be relieved by aspiration, if done early before coagulation occurs, or by massage. Aspiration is a surgical operation and should be approached and done with all the rigid attention to detail necessary to obtain a strict asepsis, and should not be done unless there is great distention of the joint with blood, which precludes the approximation of the fragments or where the surroundings of the patient are such as to deter an open operation.

Massage can always be applied and is always indicated. Application of the ice bag in the earlier stages and elastic constriction with rubber bandage, is to be commended. The limb should be put on a back splint and elevated to get relaxation of the quardri-

ceps muscle, then it will be found reasonably easy to approximate the fragments and retain them with strappings of adhesive plaster. In the application of the strips of adhesive plaster, the ones fixing the ligamentous patella should be applied first, pushing the fragments firmly upward, putting the ligamentous patella on the stretch and fixing them, the ligaments and lower fragments, firmly, so that the fragments will not become tilted or pushed aside. The direction of the adhesive strips should be from the back splint above the knee, down around the lower fragment and back to the splint upon the opposite side. The upper fragment should be approximated and strapped in the same manner, reversing the direction of the bands of plaster, the limb and splint to be involved in a firm roller bandage, extending from the toe to the groin. This form of treatment has given the writer as good results as can be obtained by palliative treatment. When no great separation of fragments occurs, it will give close approximation with many bony unions. The limb should be inspected every two or three days and any slipping plaster should be removed and reapplied. The limb not covered by plaster should be massaged to promote absorption and increase circulation. This form of treatment should be kept up from four to six weeks, then the patient should be allowed up with some form of positive retention, preferably a a plaster cast. Eight weeks after injury, if union is reasonably firm, the cast can be removed and a firm flannel bandage should be worn on the limb for three or four months and the limb massaged morning and evening. I have found a douching of the limb with cool water until the limb is uncomfortably cold and then friction with a rough towel until the circulation is restored, a good measure. It induces the patient to give massage, increases the blood supply and promotes absorption of deposits.

At the best, palliative treatment is never ideal and seldom satisfactory. You almost invariably have ligamentous union with more or less separation of the fragments, which increases as time passes and the joint is impaired in function and usefulness. In the selection of cases for palliative treatment, the pathology of fracture of the patella must be taken into account. The patella

is situated on the anterior aspect of the knee and rides in the intercondular notch. To its upper border is attached the aponeurosis of the quadricep extensor, latterally, it receives fibers from the external and internal vasti and attachment from the fascia lata; anterially it is covered by extension of the aponeurosis of the quadricep and the patella bursa, posteriorily by reflection of the synovia, and to its lower border is attached the patellar ligaments. If the fragments are at all widely separated, the aponeurosis is torn, and experience has shown that the tear of the aponeurosis is rarely at the same point as the fracture, usually below. As a consequence, the torn aponeurosis falls between the fragments, preventing close approximation. Macewen first called attention to this point (Annals of Surgery, March, 1887), reporting thirteen cases where the aponeurotis fibers intervened between the fragments. This condition was studied and demonstrated by Hoffa. Powers, in an exhaustive article (Annals of Surgery, July, 1898), says, "The prepatellar tissues fall into the breach. This is a matter of greatest importance, first described by Macewen, and since confirmed by many observers who have operated," and again, "There is no room for doubt that the prolapsed floor of the bursa and the aponeurotic fibers at the front of the patella is of constant occurrence in all cases of fracture due to muscular action, while Phillips and other writers state that it is almost invariably found in breaks due to violence." These statements have been confirmed by all who have reported operative cases since. In all my own cases, I have met all the foregoing conditions, more particularly the laceration of the aponeurosis, at a point below the bone line of fracture, allowing an apron of aponeurotic tissue to fall between the fragments of the bone. I also found much more effusion than I expected, consisting of more or less organized bloodclots, which were intimately mixed with the shreddy aponeurotic tissue and bone fragments, requiring quite active curetment to remove.

That a great amount of this effusion could be removed by aspiration or introducing the trocar is very problematical. If not removed, the clots become organized and form adhesions which become a potent cause of loss of function. I have this condition in

one of my cases. This man had had a fracture which was treated by palliative measures, had a reasonably good recovery with ligamentous union. Eight weeks after fracture he fell while on crutches and refractured the patella again. He made a fairly good recovery with probably an inch separation and a loose joint. Some six months after last injury, in stooping suddenly, he tore the lower fragment of the patella from the intervening ligament and was then referred to me for operation. Upon opening the joint, I found numerous adhesive bands, which were without doubt the organization of bloodclots from former injury. In this case bony union followed operation, but the function of the joint was and still is impaired by the old adhesions.

Arthrotomy for the repair of the fracture of the patella was done occasionally before the days of asepsis. The first case reported in which the joint was opened, was by Cooper, of San Francisco. Other surgeons reported a few cases, but it was to report failures, as infection invariably took place and there was loss of motion, loss of limb and loss of life. The dangers were so great that the operation was discarded. Lister first advocated the opening of the joint as a routine method, reporting five cases with fairly good results. This was in 1883. Since then, the operation has been commended and condemned. At one end of the line stands Jacobson, who says, "This operation brought before the profession by Lord Lister, seems to have dropped somewhat out of notice," and again, "In simple fracture, the general opinion of the profession has appeared to be against operation." At the other extreme stands Ochsner, who says, "If the surgeon absolutely controls the situation, so that he can be certain of asepsis, then I believe the operative method is always indicated." Powers (Annals of Surgery, July, 1898), collected the opinion of ninety surgeons, with a total of seven hundred and eleven operated cases. Of the ninety surgeons recorded, seventeen, or twenty-three per cent., are deliberately opposed to the operation, nine urged operation in all cases, while forty-one, or fifty-six per cent., recommend operation in selected cases. Of the seven hundred and eleven cases recorded, there were three death from sepsis, two of total ankylosis and

twenty-eight others where marked stiffness and disability resulted. The remaining six hundred and seventy-one were reported as satisfactory. I have had no means of getting the statistics since Power's article in 1898, but have taken what I could find in the literature for the last year. Blake (J. A. M. A., Oct. 1, '04), reports twentyt-wo cases operated upon with satisfactory results; Elliot cites thirteen cases, all with primary union and perfect restoration of joint function; Hutchinson reports six cases, five of which were operated on with good results and in the case not operated on with good results and in the case not operated on there was separation and disability: Gibbon reports four cases, all with good results; Plummer, two cases in which he used silk with satisfactory results; the writer has twelve cases to report with eleven recoveries with full restoration of function. Five of these cases were compound and should be excluded from a discussion of operation of election. Of the remaining seven, two were cases where former fractures had given poor results, five were for recent fractures; of these three were for indirect and two were for direct violence with separation of fragments. For opening the joint, there are five incisions found in different works on surgery. First, the linear perpendicular incision, three and one-half inches long; second, the transverse linear incision, three inches long; third, the semilinear incision with the convexity upward; fourth, the semilinear incision with the convexity downward; fifth, the semilinear incision with the convexity outward.

The linear perpendicular incision does not give an extensive view of the joint or an opportunity to remove clots. The transverse is objectionable because the scar is opposite the line of fracture, and in case of a refracture is liable to give away and make a compound fracture.

The similenear, with base downward, interfered with return circulation and the flap is apt to slough.

The semilinear, with base inward, I have had no experience with.

I think the semilinear, with base upward, fulfills the indications, as it gives a good view of the joint, and by letting the lower mar-

gin of the incision come just below the edge of the patella, it does not come over the tuberosity of the tibia and avoids the line of fracture. The incision should be carried down through all tissue to the capsul and all tissue should be reflected upward from in front of the patella. The base of the flap should be high enough to give a good view of the aponeurosis of quadriceps, for a free opening of the joint is preferable to a small one and the danger of infection no greater. The fragments of the patella should be turned out; all fringes of the aponeurosis should be cut away; the edges should be cureted to remove any adherent clots or tissue; the clots should be removed by irrigation with sterile normal salt solution or wiped out with sterile gauze or removed with sterile instruments; under no conditon should the hands touch the joint; the fragments of the patella should be approximated and the lateral fascia should be stitched with No. 3, forty-day chromicized catgut. Two or three stiches of No. 1 chromicized catgut should be put into any aponeurotic tissue which can be picked upon the anterior aspect of the patella. Then a suture eighteen inches long of No. 6 forty-day chromicized catgut should be threaded through a large and strong half-curved needle, which should be entered into the aponeurosis just above and on a line with the outer edge of the patella, carried through the aponeurosis and come out on a line with the inner edge of the patella, carried down to just below the lower fragment and entered and carried through the patellar ligament and emerged on a line with the outer edge of the bone. This retention suture should be drawn taut and tied at the point of its exist from the patellar ligament with a triple knot. The reason I specify the position of the knot, is that if absorption is slow, and sometimes chromicized gut does not absorb at all, the knot will be in the least exposed situation and less liable to produce irritation. The flap should now be replaced and sutured with due care to promote primary union. The wound should be dressed dry. The limb should be incased in a plaster cast in fullest extension, the cast reaching from toe to groin and the patient put to bed with the limb elevated not less than twelve inches at the heel. An elevation of eighteen inches is better. If no symptoms of in-

fection arise, the cast is not disturbed for two weeks, when it is opened and massage commenced. After three weeks from the time of the operation, the patient should be allowed up with a positive retention splint on, but should be allowed to put weight on the knee. From this time, on passive motion should be made. After six weeks from the time of operation the back splint should be removed and the limb incased in a flannel bandage so as to limit the motion in the knee.

I think the following is a fair statement of the present status of the question of treatment of recent simple transverse fracture of the patella:

1. Operative treatment should never be undertaken except under the best of conditions for maintaining asepsis.

2. Presupposing ideal asepsis conditions, not every case should be subjected to operation, but only those in healthy patients of suitable age, with at least half an inch of separation of the fragments, and lateral tears which compromise the "reserve extension apparatus," or in patients following arduous occupations.

3. The operative treatment fulfills all the indications for treatment in a manner which the nonoperative method can only partially achieve, but good functional results follow the inoperative treatment as a rule.

4. Early massage in all cases favors the early and complete restoration of function of the joint, and should be used in all cases.

5. If operative treatment is employed the open arthrotomy should be used.

6. Absorbable suture material applied to the soft parts is sufficient in nearly every case.

DISCUSSION.

Dr. L. G. Bowers, of Richmond: Mr. President and gentlemen, this is a very interesting subject and a very interesting paper. I congratulate the doctor upon his paper and upon the success of his work. I have not seen very much of this kind of fracture, but I know of no kind of surgery in which I feel in doing an operation that the responsibility is greater, from the standpoint of technique.

I think if we can get a perfect technique it is our duty to open up these cases and suture them. This is the only kind of a case in which I use gloves. I have used the fingers, I think, only in one or two cases where I have had to suture. I practically use forceps after opening up the incision. I would use the flap incision, one particular reason for doing so being not to have the open skin wound at the point where the transverse of the fracture is; and then if we can not have the skin perfectly sterilized, which we can not, we are more likely to get an infection of the joint, which is disastrous. I think if you see these cases after we try to put them in a splint—I remember one case after being up two or three weeks and getting no result I opened it up to see what the condition was—we see how imposible it is in a great many instances to get any results, as the aponeurosis practically covers the patella, and it will not tear straight across, but pull out in fragments, and those pieces will drop down between the two parts of the patella, and, becoming organized, separates them; and if we get any union it is a fibrous union, usually. For that reason, it seems to me, if we have an experienced hospital surgeon, who has sufficient work to have a nearly perfect technique, no doubt suturing them is the better plan. I have only used twenty-day catgut, about No. 3, on the cases I have sutured. I have used practically the method he has used. I would use the drill and use silver wire, and would use No. 1, chromicized catgut. In putting on a rattan splint without suture, you know when we get it together the edges will turn up in that position (illustrating). We can put the flap, or third plan, around to keep it down; but there is nothing in my experience that will keep it down as well as the sutured fascia over the patella.

Dr. W. H. Link, of Indianapolis: Mr. President, I feel like discussing this paper. I saw the two cases that Dr. Ford has presented in the picture he passed around, and the results were very beautiful. Dr. Ford says you must never put your finger into the joint. When I hear a man, who has more experience with the knee joint probably than any other man in the State of Indiana say that, I feel like respecting that opinion; but unfortunately I

never heard it before. I have had some experience, and I have always treated the knee joint with the same tender care that I would the abdominal cavity, but when I opened the knee joint I introduced my finger to see if there was anything there. If there was I wanted to take it out. And while my experience has not been as large as Dr. Ford's, yet it was worth as much to me, and I never saw any bad results from introducing my finger in the joint; and I would like to ask Dr. Ford if he can remember that he ever had any bad results that he can trace to such a thing as that? I would like to know if he speaks from experience, or is theorizing on that matter.

Dr. J. H. Ford, of Indianapolis: Mr. President, I will say that before I quit putting my finger into the joint—using rubber gloves—I used to have infection occasionally; which I have not had since. That is the only thing.

Dr. W. H. Link, Indianapolis: Mr. President, probably if I have to open the knee joint again I will profit by that statement. I am asking for information. Now, then, the doctor makes another statement that might need definition. That is to say, you must always get your patient where you can have the most perfect asepsis. You doctors who have been doing surgery, like I have, around over the country, and had to take your patients where you found them, and will yet have to do so for a long time, can not prove as much by that statement as you can by the other one. You have got to operate on your patients where they live, most usually; and the most perfect place to secure asepsis now is in the hospital built on the pavilion plan. That is to say, instead of having one great building for twenty or thirty or for fifty cases of all kinds, suppurative and otherwise, you build little cottages around over as much ground as you can buy conveniently, and isolate your patients as much as possible in those different houses. I have been operating for fifteen years in one of the biggest pavilion hospitals in this country; the whole State of Indiana was the hospital and the various pavilions were the rooms and dwelling-houses of the farmers and inhabitants that live around over the State of

Indiana. Why it makes an operation any safer to scatter four or five buildings, for instance, over a ten-acre lot, and call it a pavilion hospital, than to scatter four or five hundred over a county and call it a place where people live, is something I can not understand. You certainly can, any place where people live, have all the hot water you want. You can boil your instruments. You can wash your hands. You can bathe them in a solution of bichloride of mercury, if you wish to, or you can cleanse them with soap and water, and brush and alcohol. You can cover the field of operation with aseptic towels. And you have an atmosphere in the country district, or small village, that can not be duplicated in any city, or around any hospital; and why that is not one of the most perfect places to secure absolute asepsis I can not understand. I have operated some in the hospital since I have been in Indianapolis, but I have operated more times in the houses and at the homes of people in the various counties of the State before I came to Indianapolis, and I can say that my results were better at the houses than I have been able to obtain at the hospitals, where I had to have two or three nurses handle every suture that was reached to me, and some assistant to handle my instruments. If you operate in the country you learn to rely on yourself. You prepare your instruments for yourself before the operation begins, and after they are sterilized nobody touches them but yourself. Nobody touches your ligatures but yourself, and hence you eliminate every source of infection but yourself; and if you have infection in that knee joint, or in that abdomen, when you open it, it is your own fault and not the fault of the place where you operate.

Dr. David Peyton, of Jeffersonville: Mr. President, lest I forget it, I want to say with reference to the remarks of the last speaker, my advice to him, and to every other surgeon, is that unless they can place their knee joint case in a hospital where they can have the most perfect care from the standpoint of asepsis the patient is much safer in reference to the condition of the joint, the limb and his life, if you do not operate than if you do operate. Three years ago I read a paper at Kansas City to the Mississippi

Valley Association on this same subject. The essayist is practically in accord with every thought and with every idea that I presented in that paper.

However, in patients with fracture of the patella it is not my practice or habit to recommend but one conditon of temporary treatment except under certain circumstances, and that is that the patient be put to bed and ice kept over the injured joint for eight or ten days with the view of reducing as much as possible the acute condition following this injury. It is then my practice and has been, provided the patient is under fifty years of age, and in a reasonably good physical condition, to advise operation at all times under those circumstances. Why? Because the operation being done by a surgeon in a hospital, a surgeon imbued with the highest degree of asepsity, it is much safer to open the joint and do the operation than to take the chances of an elongated patella and a bad joint, a practically useless joint. I say it is safer, because where you observe the rules of sepsity, where you are surrounded with such conditions, it is absolutely safe. Otherwise it is very dangerous. I say it has been my practice to open the joint, to make a transverse incision, if you please, a little below the line of the fracture, and in a vast majority of cases, as the essayist has very correctly said, you find the aponeurotic covering torn at a line below the fracture, and you find by reason of the conditions there that the aponeurotic covering there has been pulled in one way and another and is between the fragments, so that if you do not operate that membrane is between the fragments, your joint is filled up with blood clots; they afterward becoming organized, and it is simply impossible to secure bony union in that conditon. Therefore, you get into the joint. But keep your fingers out of the joint. You can sterilize normal salt solution. You can not sterilize with absolute perfectness your hands, and right here let me say if ever there is a case where you want to use your gloves this is the case, this is the condition. It is different from opening the abdomen. The dangers are greater, so far as asepsis is concerned. So that I say irrigate, cleanse out the joint perfectly with your normal salt solution, pick up your torn aponeurotic covering, close it

with your catgut and chromicised catgut, and close properly your external wound. It has not been my practice to put on the plaster dressing. Why? Because you can get the same results of fixation with a posterior splint, which is lighter, and you can observe it much better; and therefore I have used a posterior splint; and the patient is kept confined in bed for two weeks, or three weeks, when passive motion is begun; and I say to you, gentlemen, you will invariably, or almost invariably, get good results in this way. I want to compliment the essayist on his paper.

Dr. H. R. Allen, of Indianapolis: Mr. President, I want to compliment Dr. Peyton and Dr. Ford for both agreeing on the conservatism of this paper; and I want to congratulate Dr. Link upon his good fortune. You can not be too conservative, you can not be too antiseptic as well as aseptic in performing this operation. I agree with Dr. Ford in every point he made. I like that flap up, with the base up, some circular portion of it up. I like to use the metal suture, soft steel is quite as good, where you can use it, as any other. Chromicised catgut, as Dr. Ford has already pointed out, some of it will not be absorbed, and if you want the absorbable catgut then you must be very careful about sterilizing the catgut before you use it. Dr. Ford prefers the plaster splint. Dr. Peyton prefers the posterior splint. I prefer the posterior splint and never use the plaster. I use it altogether where you want to hold and get affixation or immobilization. Where you have always heretofore had to use plaster of Paris you can now use ordinary steel wire, tinned on the outside, and adhesive plaster. It is a steel structure as far ahead of the other as the modern steel building is ahead of the Aztec or adobe hut. After you start with it once you will never quit it. I know many of you are going to begin trying it, for you can imagine what I mean. You have a wire splint running down here, ducking underneath the leg. You fasten your adhesive plasters on these two side bars. Let them run underneath the leg. It makes a hammock for it to lie in. It is lighter, cheaper, easier to make, and I know nothing at all against it. You can hold the strongest leg that a man can wear. Dr. Ford's paper is commendable, timely; and it is the sort of a pa-

per that will act as a word of caution to any of you against jumping into the knee joint too promptly. Your preparation must be perfect before you open one of these joints. Keep your hands out. Keep your gloves out. You can do practically everything with gauze and sterilized instruments. Remember the knee joint is one part of the body that you must fear. I want to thank everybody who has indulged in this discussion, and Dr. Ford for presenting the paper.

Dr. Hetherington, of Logansport: Mr. President, one thing that seems to me important in this discussion is the question of subsequent injury. Neither one of these radiographs are good ones, but they both happen to be radiographs of knees that have received second injuries. Here is one (producing picture) that has been treated with the strapping and has a good firm fibrous union. The man walked five months, fell and broke it and ruptured this fibrous band. He has never since had a good knee. You take and rupture the fibrous union, then you can not get a good fibrous union again. Neither one of these are very good radiographs. That (indicating) is the conditon before: This is the one that was wired in Chicago. The young man fell—it is a case of Dr. A. J. Herman—the young man fell and ruptured the patella the second time. The knee was opened and it was found that the wires were broken, the wires it had been wired with. I don't know anything about the history of the case except I was present at the operation. The wires had been broken. The bone was not injured, so that Dr. Herman simply inserted heavier wires in the same openings in the bone, and by inserting the heavier wire and wiring it together again he gets just as good a knee as ever. That is one thing, that the patella can be repaired with wire. Of course, no one would admit fooling with the knee joint at any place except where he has absolute control.

Dr. H. R. Allen, of Indianapolis: Do the wires go clear through the patella?

Dr. Hetherington, of Logansport: Not quite. You can see the wire don't go quite down to the patella. It was wired the first time

in Chicago; the second time in Logansport. The second time is the condition you see it in the radiograph. Since it was united I have never taken a radiograph of it. The man is still a cripple, and has practically lost the use of his knee joint.

Dr. Joseph D. Bryant, of New York: Mr. President, I will ask to be indulged just a minute. I have wired a good many patellas, thirty as I remember now, but I do not wire all patellas that are fractured. I never wired a patella in my life except there was good reason for doing it besides the fact that it was fractured. My reasons for taking that position are these: That in all my experience in connection with fractures of the patella, in the preaseptic and antiseptic term, I have never yet seen a case where serviceable movement did not succeed the ordinary method of treatment. I have seen some very difficult fractures, some with a long ligamentous union, but I never yet have seen a case in which the patient could not, after a little while, get serviceable use of the limb. I remember distinctly the second fracture where I urged wiring. It was refused me. I said to him, "You will have a defective limb." He says, "That's my affair." I said, "If that is your position, then it is your own affair, not mine." Whereupon, he went his way and I went mine. One day I met him walking on Fourth Avenue, in New York. When he saw me he commenced dancing a jig, and to oblige me pulled up his trousers to show me his limb, and there it was, too long, but serviceable; and he went off laughing at me, saying, "You see I have very good use of my knee." Of course it would not be as serviceable a limb, elongated as it was, as it would have been without the elongation; but I have never seen one that was not serviceable. My position has always been this: Given a fractured patella, which history teaches will recover in a great percentage of cases with a serviceable limb, should I expose the patient to danger in order to secure an ideal result? I have said no. There are those in the cities and country, however, who wire the patella under all circumstances. I mean by that simply because it is broken. I know of one surgeon who has wired two hundred. I have wired thirty. I know of surgeons who are equally as good in all surgical procedures as can be possibly pointed out

who have yet to wire their first five. Now that I am speaking of wiring, of the thirty that I have wired excellent results have been obtained in all but two. One of those patients died of delirium tremens, therefore the wiring can not be blamed for it except in so far as the administration of the anesthetic was concerned. The second was a case of extra articular suppuration. No doubt I was the cause of it, because the circumstances were such that I could lay it no where else except to myself or my assistant. It was a private patient. In the house we should be surrounded with everything that will contribute to asepsis, so far as external surroundings are concerned. As I say, I wired thirty. I do not expect to wire any more, even with all the suggestions that have been made concerning it.

I regard the operation which Dr. Blake has recently described, consisting of throwing a string or catgut through, tying it tightly and drawing it together, which fixes the fragments just as firmly, so far as necessary for union, as good as wiring. In that way the shortness of the operation makes it unnecessary to introduce foreign bodies, or lay the foundation for any subsequent disease of the bone. I find in trying this operation, which I have not tried but once, by tying the fragments are as firmly opposed, as far as union is concerned, as though they were wired.

Now, so far as the incision is concerned, formerly I made a transverse incision through the skin and aponeurotic structure until later on, while here I made a simple vertical incision and used one small wire, paying no attention whatever to lateral lacerations. I reasoned in this way: That in the ordinary way the patella is shortened, but if treated in the ordinary way the patient secures a good serviceable limb; therefore the question whether or not the lateral structures should be repaired can not enter into it. It was possible to draw them together too tightly, and it might interfere with the proper function of the limb. Whether it was right or wrong the results were entirely satisfactory.

Now, with regard to meddling with the joint. I think I must add my testimony to those who are inclined to think it dangerous to meddle with the knee joint. I do not believe it can be put on a

par with the perineum, because we know the perineum absorbs most rapidly everything that is precipitated into it. Numerous experiments have been conducted to that effect. I do not believe it is wise, unless one is positively certain of their asepsis, to introduce the finger into the knee joint. I do not believe it is dangerous to all to introduce the finger into the peritoneum. Verified theory in reference to introducing the finger into the knee joint, during my practice, has been to establish thoroughly that it should not be done. Never introduce the finger unless it is protected. If unprotected always use an instrument for the purpose.

Now, another question which has not been spoken of here, whether it should ever be drained. There is something to be said in connection with drainage. You may say if a man is positive of his aseptic treatment there is no need to drain. I agree with that, but can a man always be positive? I don't know. I think not. If he is always positive he has been sometimes mistaken, because suppuration does occur; and therefore, in instances where there is any doubt in my mind regarding it I always introduce a pair of scissors, pointed scissors curved on one blade, through one side and out through the knee, and put several threads of silkworm gut through it, not because I believe it is infected, not perhaps because I have any reason to believe that it will become infected; but if it should be infected for any reason I may be promptly made aware of the fact by the presence in the joint of suppurative forces, which ordinarily take some little time. I suppose I do that in twenty-five per cent. of the cases. I do it in some cases where for some reason I feel there may be infection lurking.

Now, regarding the after treatment. The treatment is massage, commenced in about a week or ten days. I have given up, however, any attempt at passive motion. Allow the patient to get on his feet, using the massage. Use the limb carefully, after he can walk without the splint, of course, and secure control of it by his own cautious movement. Fortify the knee joint by a splint which admits of but a certain amount of motion, so that it is impossible for the patient by any incautious movement to cause premature injury.

I thank you very much, and apologize.

Dr. J. H. Ford, of Indianapolis: Mr. President and gentlemen, I want to thank you for the kindly manner in which you have received my paper. I have no criticism to make of anything that has been said. The only objection I can see to what Dr. Bryant has stated about his oblique and his subcutaneous or superficial suture is that I think it is just as dangerous to introduce sutures through the skin in this method as to open the joint. Simpson tried it for long years, but has abandoned it. I am not much afraid of infection in a joint, provided it is not a compound fracture. I drain in all compound fractures. I have the location of the operation, and I take care of my part previously. I try to make that joint so that asepsis will not occur. I suppose it depends on two conditions—warmth and moisture. It don't make any difference if the germs are there, they require warmth and moisture to develop. I try to make that joint so dry before I close it up that there is no moisture there to develop very much infection, providing infection is present. I keep it dry and I keep it immobilized, because no effusion will occur in a joint when it is not in motion. Any joint that is at rest very long becomes dry from the want of motion. As a consequence you have very little effusion in the joint. Necessarily you don't have very much chance of infection; and if there should be any infection there, unless it is a great deal more in amount than I would expect, I would hardly expect to find infection take place inside of the capsular ligament. I might expect to find infection outside of the capsule, in the superficial tissue, but I have so far been very lucky in escaping it. I put my finger in the joint, but it was protected by the glove. I put it in in order to replace some articular cartilage. I have no objection to putting my finger in the joint properly protected, but there is no reason for taking unnecessary risks, and when you can do it with an instrument that you know is absolutely sterile. So, when there is no occasion for putting the finger in, I do not introduce it. I always wear rubber gloves.

I am not wedded to anything, but I use plaster of Paris because it keeps the limb absolutely immovable. There is no question about its being there when you go back. With the back splint you are not so certain of its being there. The patient may dislodge

it. Dr. Allen's adhesive plaster I think will hold. I have seen it, but I have never used it in my own experience. I believe in passive motion to a limited extent, for the reason that the joint is dry by want of use, and I want to excite the secretions. Gross enunciated the theory many years ago that the best stimulant to the disabled joint was use, and I have always acted upon that theory, within due bounds, and found it to work well. I open joints freely. I am a coward, a very great coward, and I open the knee joint only under the most urgent conditions, but when it is necessary to open it I do not hesitate to perform that duty. I have opened the joint a great many times, and so far as that is concerned, I have been a remarkably lucky man. The next joint I open may be one I will wish I hadn't opened, for I am always afraid of it and the more I open the more I become afraid, just like I am about an anesthetic. I never had a patient sink under an anesthetic in my life, but I may have one the next time; and I never see a man take an anesthetic that I don't think of all the possible conditions about it.

So far as the wire is concerned it is a foreign substance. If you can put in an absorbent suture that will work, I prefer it. The only possibility, if it is aseptic, is the possibility of its not being absorbed; and in that case you are no worse off than with the wire. In using the wire you have to invade the integrity of the bone, which I try to avoid. If you do go into the bone don't go through it because there is nothing on the posterior aspect of the patella except the synovial, and anything that protrudes through there will cause irritation and a condition of more or less pain and suffering for your man. If you think you have to invade the integrity of the patella put on your sutures in a slanting position, and not clear through the bone.

I think I have nothing further to add, only about the palliative treatment. This will appeal to a great many men who do not open joints. Dr. Bryant said he used the retention stitch in joints that have not been opened. That does not get away with the objection. The only objection to that is the point of getting rid of the aponeurotic tissue that falls between the bones. You fail to get out what

is between the bones, and as a consequence you can not hope, except in very rare exceptions, to get anything but a ligamentous union. A ligamentous union may be firm and close at the commencement, but as time goes on you will find that that ligamentous union is elongated, and where you have had a close approximation at the time of the fracture, very shortly afterward, in two or three years, it will stretch out to be anywhere from a half or three-quarters of an inch to an inch and a half or two inches. The man on level ground can get along, but he can not go down stairs, he can not carry a hod upon a ladder, he can not do many of those functions which it is necessary for a man to do following any of the arduous occupations of life. I select my mode of treatment from that point of view largely. The man's occupation has a great influence on me, whether I shall operate or shall not operate. If his task is a task that a man can get along at with such recovery as he is likely to make without an operation then I am slower to advise operation. If he is an artisan then I would advise operation sooner than I would with a man whose occupation is light, because an artisan with a disabled knee is practically a permanently disabled man for all the purposes of his life.

Dr. Joseph D. Bryant, of New York: Mr. President, I did not intend to convey the idea that I used the subcutaneous stitch. I never did in my life. I make a free incision, taking [illegible] stitch to the medium line. That I have used often.

Dr. J. H. Ford, of Indianapolis: I misunderstood you, then, doctor.

THE DIAGNOSIS OF GALLSTONE DISEASE.

BY M. A. AUSTIN, OF ANDERSON, IND.

Cholelithiasis is a condition that has been recognized as a definite abdominal condition since early in the sixteenth century. Unfortunately it has been in the past one of those conditions whose early stages have been unrecognized, and like nephritis must have reached a dangerous, if not incurable, state before diagnosis is made.

Necropsy reports give us statistics as to the presence of gallstones in about ten per cent. of all adult persons. But of these latter not more than one in ten have given a history of trouble arising from the presence of these concretions. The last five years has given us more literature upon this subject than any other period, and the recent publication of a number of volumes upon this disease alone, has brought to the general practitioner a source of information that would repay him an hundred-fold were he to avail himself of the opportunities for a conscientious study of some good work. When we stop and think that ten out of every hundred adults are possessed of gallstones, and that only one of these ten have ever had a probable diagnosis of trouble arising from them, we are facing a situation that may be true or may be so only as the gall-bladder has been ignored as a source of disease and reflex symptoms.

Kehr, Moynihan, Robson, Deaver, Bevan, Mayo and Murphy are now publishing records, which like those of appendicitis a few years ago, cause one to realize a seeming greater prevalence of the condition, when in truth it is simply the better recognition of the true cause of many symptomatic troubles, that were formerly ascribed to the functional deficiencies of other organs.

Unfortunately, jaundice has been the dominant symptom in the minds of the general practitioner, and usually a factor that must

be present ere he considers a thorough examination of the hepatic region necessary.

Moynihan says that conservative estimates eliminate jaundice as a symptom from seventy-five per cent. of all operated cases of gallstones, while in Murphy's practice only fourteen per cent. have exhibited this symptom. As Bright's disease is a synonym for negligence on the part of the patient or a lack of ability in recognition of early signs of renal insufficiency on the part of the doctor, so will jaundice some day be thought the terminal symptom of gallstone disease.

Experimentally it has been shown that there are two conditons necessary before gallstones are formed. First, a foreign body; and, second, the presence of an inflammatory reaction. The colon and typhoid bacilli are frequently found in pure culture in the center of a biliary calculus, and these two germs are now conceded to be the greatest factors in the production of these pathologic products. Some intestinal disturbance sends a colony of the colon bacilli up the common bile duct, or an attack of typhoid fever produces a general infection, and with their entrance into the gall-bladder, an exfoliation of the superficial epithelium takes place. A thickening or inspissation of the bile follows, and around a clump of germs and epithelial cells there is a deposit of bile salts and cholesterine. Cholesterine is an alcoholic product of the mucous cells lining the gall-bladder, that normally is held in solution in the bile, but with the changed consistency of the bile following an inflammation, we have the cholesterine precipitated in the form of colorless, silky crystals. This cholesterine forms the greater bulk of all stones, and the fact of the substance being insoluble in water, alkalies or weak acids, and soluble only in ether and some of the strong acids, makes the matter of medicinal treatment not only a probable cause of discouragement, but a scientific impossibility so far as their removal by internal medication is concerned.

In an article on the "Diagnosis of Gallstones," written by Dr. J. B. Murphy, of Chicago, and published in the Medical News, May 21, 1903, is a chart which I think covers the subject of gall-

stones and gall-bladder disease better than any syllabus so far published. I am taking the liberty of reproducing a portion of the chart, and through the kindness of Dr. Fairfield, I show a number of drawings that will serve to make a part of the paper more definite. (Charts shown when paper was read.)

SYMPTOMS OF GALLSTONES.

I.	PAIN	(1) Local; (2) Referred.
II.	COLIC	(1) Character; (2) Duration.
III.	NAUSEA	(1) Vomiting.
IV.	HYPERSENSITIVENESS	(1) Palpation; (2) Percussion; (3) Inspiration.
V.	TEMPERATURE	(1) Continuous; (2) Intermittent; (3) Remittent. Murphy's "temperature angle of cholangic infection."
VI.	TUMOR	(1) Shape; (2) Position; (3) Continuous with liver; (4) Relation to hepatic margin; (5) Courvoisier's Law.
VII.	JAUNDICE	(1) Continuous; (2) Remittent; (3) Intermittent; (4) Relation to pain, temperature, and tumor.

Before commenting upon the symptoms and diagnosis of cholelithiasis, a few words as to the anatomy of the gall-bladder and bile ducts will refresh our memory. Topographically the gall-bladder is found just internal to the right ninth costal cartilage, and close to the outer edge of the right rectus muscle. A line drawn from the acromian process of the scapula on the right side down to the umbilicus, will cross the costal arch just above the gall-bladder.

The gall-bladder itself is a pear-shaped sac lying in a recess on the under surface of the liver, between the large right lobe and the quadrate lobe. It is conveniently spoken of as consisting of three parts, a fundus, body and neck. The positon of the gall-bladder as it lies within the body is somewhat different from the usual pictured representation, inasmuch as the pictures show the relation of the parts with the liver elevated, which pulls the fundus of the gall-bladder up and makes the body and neck point downward and toward the median line, a perfect position for the complete drainage of the gall-bladder. In reality the position of the

fundus and body is below the neck and only in the recumbent position is the cystic duct lower than the sac which it drains. This dependent situation of the fundus is given as one of the causes of gallstone formation, inasmuch as the incomplete drainage favors the settlement of epithelial or bacterial debris. The fundus and lower part of the body are covered with peritoneum, while the upper part of the body is in intimate relation with the under surface of the liver. The neck is narrow and curves S-shaped upon itself as it joins the cystic duct, while at the point of junction of the two there is a contraction, which serves as a fortunate barrier to prevent the migration of gallstones in the great majority of cases. The cystic duct is about one and one-half inches in length, and passes downward and to the left, joining the hepatic duct in front of and a little below the portal vein. Within the duct the mucous membrane is raised in folds presenting a series of projections that resemble valves.

The common bile duct is the largest of the three, and is about three inches in length, three-eighths of an inch in diameter and empties into the duodenum at a point about four inches below the pyloric end of the stomach. The relation of the common duct at first is directly in front of the portal vein and to the right of the hepatic artery. It then passes down between the pancreas and the first part of the duodenum, where it joins the pancreatic duct, then entering the duodenum together they pass between the muscular and mucous coats for the distance of three-quarters of an inch, finally emptying through the common orifice of a projecting papilla.

Taking up the subject of the diagnosis of gallstones we must have in mind the fact that ninety per cent. of the cases are at present unrecognized, and to ascertain what percentage of these unrecognized cases are causing gastrointestinal disturbances is the field in which careful observers are now working. How many of the ten per cent. which are recognized could be permanently cured before they have reached a stage when operation is a dernier resort, is the problem which surgeons are trying to solve, yet the surgeon is meeting with even greater difficulties in this work than he met in his efforts to reduce the mortality of appendicitis.

The following paragraphs, the first from Moynihan's work on "Gallstones and Their Surgical Treatment," and the second from a paper by Dr. T. B. Noble, of Indianapolis, are significant of my purpose in writing this paper.

Moynihan says: "It is a fact that the diagnosis of gallstones has been made readily and with certainty since the earliest stages have been recognized and dealt with by the surgeon. The early stage is the one in which gallstones insidiously formed are beginning to cause discomfort. Nothing is more certain than this, that in the majority of cases of cholelithiasis the symptoms of the earlier stages are not ascribed by the patient to the presence of gallstones, but are referred to spasms, indigestion or other equally indefinite causes."

Noble emphasizes the matter in this manner: "There is a time when every case of uncomplicated gallstones can be cured. This is not after a complicating infection of pathogenic micro-organisms has occurred; not after the implantation of adhesion to such an extent as to make the shock of operation alone hazardous; not after necrosis of the gall-bladder and perforation and peritonitis have occured; not after they have caused the epithelial cells to run amuck and carcinoma is the result; not after obstructive jaundice has existed and cholemia is present to such a degree as to make hemorrhage fatal; but at a time before the patient has gone through with all these storms of pathology, at a time when a simple cholecystotomy can be performed without complicating conditions—in other words, as soon as a diagnosis can be made."

All of the patients so far examined by me give a history of a stomach trouble of varying duration, generally referred back for a considerable time. This of itself has usually been insignificantly considered and not until the onset of pain, has the case been given more than passing notice. This pain varies in intensity from a fulness of the stomach to the most intolerable suffering, the so-called attack of colic. Strangely we learn of the referred pains before the local ones. Our patients have trouble under the right shoulder blade, which would be variously referred to the kidneys, rheumatism, sprain, biliousness, and, if associated, intimately with

a rebellious stomach, would be diagnosed as dyspepsia or torpid liver. The pain might be first noticed in the shoulder of the right or left side and with a functional disorder of the kidney might be diagnosed as a uric acid condition. The pain sometimes shows itself in the front of the chest and even goes as high as the neck, which at times cause them to be confused with pluerisy pains. Murphy, by irritating the neck of the gall-bladder after operating in cases where drainage was necessary, found that he could reproduce these pains. Seven out of ten cases would refer the pain to the right subscapular region; two out of ten would refer it to the side and left shoulder, while one in ten would refer it to the front of the chest as high in some cases as the neck, in this manner verifying the symptoms complained of before operation.

The acute pain is usually referred to the region of the pyloric end of the stomach and gall-bladder. This pain if severe will probably be mistaken for cramps or so-called neuralgia of the stomach, while in other cases where the pain has not been of the colicy variety they will tell you there is a burning pain accompanied by the feeling of a weight as if it were in the stomach. One of my cases referred to the pain as if it felt "like a horse standing upon his stomach with a red hot shoe." This pain is caused by an inflammatory condition of the gall-bladder which is associated with an incomplete or sometimes complete closure of the cystic duct. The gall-bladder becomes distended and at times becomes palpable. If not palpable these cases will always show a hypersensitiveness on deep pressure, especially so when the pressure beneath the right costal arch is resisted by the patient, in attempting to take a full inspiration. Murphy describes this sign as pathognomonic. Any irritation of the stomach will increase the pain, as is seen in those cases where food increases and vomiting gives relief. The relaxation following emesis serves to release the stone and it falls back into the gall-bladder.

Colic is another symptom which comes on only after the stones have been present for some time, and the diagnosis of gallstone colic is made secondary to the misinterpretation of other symp-

toms. The colic is usualy ascribed to the passage of a stone out of the gall-bladder. However this may be, there is generally an amount of preceding inflammation which has rendered the ducts less able to withstand the dilatation necessary for the passage of a foreign body larger than the diameter of the tube. These attacks come on suddenly and are generally as abrupt in their ending. The duration of time which the stone may be impacted varies from a few minutes to many hours. Accompanying the pain is a degree of collapse commensurate with its severity, while nausea and vomiting frequently add to the patient's distress. Gallstone colic is present only in those cases where a stone is impacted in the duct, and inasmuch as it is the exception for stones to pass from the gall-bladder, we have the true colic as an infrequent symptom of the disease.

The hypersensitiveness of the whole gastrohepatic region during an attack of colic is particularly evident, and Boas has described another area of tenderness that is not only present during an acute attack, but remains hypersensitive for a long time afterward. This area is described as extending laterly from about an inch external to the spines of the vertebra to the posterior axilliary line, and vertically from the eleventh dorsal to the first lumbar spine.

The fever accompanying gallstone disease is characterized by a temperature curve very similar to that accompanying a malarial infection. Its onset is sudden and its end abrupt. It may be diurnal or seem to have a regular period of intermission. During the febrile periods the temperature rises as high as 105, but the usual range is from 101 to 104. After reaching its maximum it rapidly declines and speedily returns to normal.

This acute temperature curve from normal to hyperpyrexia and back again is so characteristic that Moynihan refers to the records as "steeple charts," while Murphy has coined the expression, "the temperature angle of cholangic infection." In the late stages of the disease where the infection has resulted in an ascending cholangitis, we may have the fever become of the remittent type, while in those cases where the infection of the gall-bladder results

in an empyemic condition, we have the temperature assume aseptic character.

The tumor accompanying gallstone disease, resulting from the distention of the gall-bladder, may be due to an accumulation of bile, mucus or of pus. If the distention is due to the accumulation of bile, and there is jaundice accompanying it, the probable cause of the obstruction will be found to be an outside pressure upon the common or hepatic ducts, and generally due to malignant growths. If mucus is the cause of the distension, it signifies an obstruction either in the neck of the bladder or within the cystic duct, preventing the ingress of bile from the hepatic duct and retaining the mucous secretions from the cells lining the gall-bladder. The diagnosis of an ampyemic condition prior to operation is not always satisfactory, inasmuch as a severe cholangitis may give as severe symptoms without the gall-bladder being especially disturbed. A suppurative cholangitis is productive of such serious systemic symptoms that a suppurative condition is thought of at once.

Finally the gall-bladder may be enlarged from malignant disease, although the usual findings show the gall-bladder to be atrophic and the tumor itself to be wholly carcinomatous and within the contracted gall-bladder will be found a number of gallstones. The exact relation of gallstones and malignant disease is as yet under consideration, some authorities contending that the gallstone irritation is productive of the epithelial degeneration which finally becomes carcinomatous. Others equally as competent say that the carcinomatous process has furnished one of the factors suiting the process of stone formation.

A distended gall-bladder must be differentiated from tumors arising from the kidney or stomach and in some instances from other tumors connected with the liver itself.

Jaundice occurs in probably ten per cent. of the recognized cases, which is equivalent to saying it is a complication occurring in about one per cent. of all cases. Jaundice in cholelithiasis is to be interpreted differently owing to its relative time of appearance and its remittent character. Jaundice due to gallstones is usually preceded by an attack of colic, yet no attack of colic will be fol-

lowed by jaundice, unless the stone has become impacted in the common duct or an extra large stone becomes fast within the cystic duct and by pressure closes the hepatic duct also. Again in cases where a small stone is impacted in the cystic duct it may be associated with a sufficient amount of inflammatory reaction, to cause a cholangitis to involve the hepatic or common ducts sufficiently to produce a relative obstruction, accompanied by a varying degree of jaundice.

Jaundice following an attack of colic appears gradually and deepens according to the completeness of the obstruction and the severity of the accompanying inflammation. If the obstruction remains complete then the jaundice becomes permanent until the obstruction is removed. Should the obstruction of the common duct be followed by a back pressure sufficient to dilate the duct by distention, then the gallstone may be released and, floating up, the jaundice will be relieved for the time being. When the distention of the duct subsides the stone again becomes impacted and we have a repetition of the jaundice, its remittent character being a pronounced symptom.

When the jaundice is due to a cholangitis secondary to the inflammation accompanying a stone in the cystic duct, the jaundice will disappear entirely on the subsidence of the inflammation. This intermittent jaundice occurs only when the stone is in the cystic duct.

There is another form of jaundice that accompanies malignant disease, in which we find the jaundice to appear so gradually that it assumes more the character of a cachexia. Its insidiousness is also painless, but its progress is so continuous that the skin finally becomes like greenish-yellow parchment. This form of jaundice shows no remissions or intermissions, and Moynihan expresses an opinion that there is even a decided difference in the color in benign and malignant cases, the former showing the yellow, the latter a decided greenish tinge.

Another fact that has been especially observed by Courvoisier is the association of jaundice and gallstones, and a contracted condition of the gall-bladder. The inflammatory changes following a

number of attacks of obstructive cholecystitis and cholangitis, produces a thickening of the wall of the gall-bladder to such an extent that the bladder in these cases gradually becomes obliterated and is marked by a hardened mass of adhesions with a cavity varying in size down to one so small that a probe can be scarce introduced. When a jaundice is accompanied by a distention of the gall-bladder, the cause is generally found to be an obstruction to the hepatic or common ducts, by pressure from without, and this outside pressure is most often due to a malignant disease involving the head of the pancreas.

These findings are now referred to as Courvoisier's law, or as he has given them: "In cases of chronic jaundice due to blockage of the common duct, a contraction of the gall-bladder indicates that the obstruction is due to stone; a dilatation of the gall-bladder, that the obstruction is due to causes other than stones."

My records show twenty-five cases to have been observed by me during the past three years. Three of these were so-called terminal cases, in which jaundice was present. One, a case of Dr. Fairfield's, gave a history of stomach trouble extending back for thirty years, but whose jaundice was first observed three years previous. This was accompanied by attacks of colic and intermittent fever which had reduced her weight from 220 to 135 pounds. The jaundice had been present, but remittent, for over six months previous to operation. On operation I found an obliteration of the gall-bladder, extensive adhesions destroying all semblance to landmarks, and associated with an amount of cholemia and cachexia, that we had to discontinue the operation at the end of thirty minutes, for fear of the patient dying upon the table. I had freed the adhesions around the remains of the cystic duct and was attempting the isolation of the common duct, when I had to desist. The patient was taken to her room after rapidly closing the wound, and recovered to the extent in the next two weeks, that she could be taken home. In six weeks the jaundice had disappeared completely. The patient rapidly regained her strength and former weight, and since then has never had a symptom of her old trouble. In this case I probably crushed a soft stone or my manipula-

tions freed adhesions and the anesthetic relaxed the parts sufficiently to allow the stone to pass out.

A second case was seen with Dr. Nourse, of Alexandria, whom we operated upon, finding the same condition of obliteration of the gall-bladder, extensive adhesions, and a stone in the common duct. This was removed after much careful work freeing adhesions, and splitting the common duct. The common duct was then sutured and drainage was kept in the wound for three weeks. At the end of this time the bile leakage had subsided and the wound was permitted to close. The patient made an uninterrupted recovery and left the hospital in five weeks.

A third case seen with Dr. Boram refused operation and died three months later from a general peritonitis, secondary to perforation. We secured a post-mortem examination and found an enlarged, thickened gall-bladder filled with stones. At one place there was a large perforation and the stone was found in the peritoneal cavity. At another point there was a large stone outside the gall-bladder imbedded in the liver at a point where extensive adhesions bound the two together. Further complicating the case was a carcinomatous process matting the tissues together so that no surgical measures would have been available, even at the time I saw her first.

Another case observed with Dr. Fairfield through various attacks of stomach, liver and gall-bladder trouble, was a woman seventy-six years of age. Following one of these attacks of pain and indigestion she had an obstruction of the lower bowel. Injections proved ineffective and Dr. Fairfield made a digital examination of the rectum, finding a hardened mass that he had to remove by morcellation. In the center of the mass a gallstone over an inch in diamater was found.

One case was diagnosed as gallstones by the attending physician, who called me in consultation during one of the attacks. On examination I found a floating kidney displaced in such a manner as to press upon the structures in the gall-bladder region, producing almost typical attacks of colic. On placing the patient in the knee-chest position and maintaining the kidney in its proper place, the

pain was relieved. Since then I have operated on this case suturing the kidney in place and the patient has been completely relieved of these attacks.

Of the other cases in only three had a diagnosis of gallstone been given or an examination made as to their possible presence by other physicians. All but three had been through various forms of treatment for stomach trouble, with no benefit. Ten had attacks of colic that had been treated for neuralgia of the stomach. All of them have had stomach disorder, and in seven vomiting was a feature which gave relief. Besides the local pains in the epigastric region, fifteen have had marked pains in the right subscapular region. In four cases the left side and left shoulder were complained of, while in two the pains were referred to the front of the chest. All of the cases were hypersensitive in the right subcostal region over the gall-bladder, when pressure was resisted by forced inspiration. All of the cases so far examined with the Boas test of hypersensitiveness in the right dorsal region between the eleventh dorsal and first lumbar spines, have shown a marked degree of tenderness.

In one case a palpable tumor extended three inches below the margin of the liver.

In all the cases medicinal measures of every sort have proven only palliative. Some of the cases have succeeded in preventing frequent recurrences of the severe attacks of colic by copious doses of olive oil. Some receive a degree of benefit from sodium salts, preferably the phosphate and sulphite.

In some of the cases I believe a trial of the Robinson flushing treatment would have proven a temporary boon, and this measure I am using whenever I find any tendency to cholemia, renal insufficiency or chronic constipation. This treatment consists in flushing out the stomach by the administration of a glass of hot water containing enough common salt to make an approximate half decimal salt solution, about eleven grains to eight ounces of hot water. To this is added the administration of a tablet containing aloes, 1-3 grain; cas. sag. ext., 1-40 grain; potas. bicarb., 1-3 grain; sod. bicarb., 1 grain, and magnes. sulp., 2 grains. The

salt and last-named formula tablets are now prepared by Parke-Davis Company. One of each of these tablets is taken in hot water before each meal and with as much fluid as can be borne easily in mid-morning, mid-afternoon and before retiring. This makes two of each six times a day.

Notwithstanding all the good which a thorough visceral drainage and any other needed treatment does, we must remember that we have not removed the cause of our chief trouble. The gallstones are still there. More conservative surgery will be done when the genral practitioner becomes better acquainted with this disease. Less emergency work and fewer deaths will be recorded when it is possible for the surgeon to receive his cases in the beginning of the terminal stage.

GALL-BLADDER SURGERY.

BY T. C. KENNEDY, M. D., OF SHELBYVILLE, IND.

This is certainly the age of surgery, and in calling your attention to the rapid advances that have been made in the surgery of the upper abdominal zone, I want to express the hope that we will not see the pendulum swing to that extreme that a few years ago was the case in appendicitis and disease of the ovaries.

The rage for doing appendectomies and ovariotomies went too far and it is now feared by many that cholecystectomies and cholecystostomies will be the all-absorbing topic. In many cases of diseases of the gall-bladder we must resort to operative procedure, but we must be diligent in our search for those cases that will yield to internal medication and treat them rationally with complete relief to the patient. It has been advocated by some surgeons when doing an abdominal section to always take out the appendix whether diseased or not, and before long some enthusiast will advise us to always do a cholecystectomy when operating in that region. The first thing of importance is to get a complete history of the case, as the diagnosis must largely depend on knowing the number of attacks, the kind of pain, the condition of the stomach, and pancreas. A careful examination should be made of all the other organs, as we must differentiate between cholecystitis and appendicitis, renal cholic, duodenal or gastric ulcer and pancreatitis. Very frequently it is impossible to make a diagnosis of the exact condition, but we are called upon to decide whether it is a case that will yield to medicinal treatment or is one that can only be cured by an operation. An exploratory incision will reveal the character of operation necessary and the operation must be prepared to do a cholecystectomy, etc. Many cases of gall-bladder disease have been loosely diagnosed as gastritis, indigestion, dys-

pepsia, gastric catarrh or neuralgia of the stomach, and after being treated by one physician and getting no relief from their suffering, drift to another physician, who calls the trouble by a different name, but treats it with the same result. We must look to the general practitioner for a diagnosis in these cases, as they always go to him first, and if a careful study of the case is not made, the true seat of the disease may be overlooked. A great many of these cases are permitted to drift along and will only consent to an operation when they regard it as the last chance, and when they reach the operating table they are many times in an almost hopeless condition, and then have to undergo a much more severe operation than would have been necessary in an earlier stage of the disease. Kehr says, "The slight danger of an early operation stands in no sort of a relation with the great danger of the disease itself." Another thing the surgeon frequently has to contend with in these old, long-standing cases, is the morphine habit. These cases invariably do badly, and are the source of great concern; they have extreme nausea, take insufficient nourishment, have obstinate constipation, and oftentimes collapse suddenly. It is my invariable rule to refuse operation on a patient that I know is a confirmed user of morphine. In obtaining the history of these cases, it may be impossible to ascertain the true condition of affairs. While admitting that they take the drug to relieve the seizures of pain they deny strenuously that they ever take it between the attacks.

I want to impress upon the minds of the general practitioner the great importance of informing the surgeon of this habit if it exists. The mild cases of inflammation of the gall-bladder are very difficult to differentiate; these are the cases that are diagnosed stomach trouble, especially when there is vomiting, after which the patient feels better; then we have the cases that simulate appendicitis so closely that they may be mistaken for that disease, and still further to add to the confusion, we may find both diseases existing at the same time, as I did in a case which was referred to me recently. Ochsner and LaPlace have reported cases in which they found suppuration coexisting in the appendix

and gall-bladder. In many cases it is difficult to differentiate between a cholecystitis and cholelithiasis, and Rolleston goes so far as to say that the distinction is an artificial one; while Mayo Robson contends that cholecystitis or chronic catarrh of the gall-bladder without jaundice form a separate, distinct, and definite disease. It is not my desire to deal with the symptomatology or pathology of gall-bladder diseases, but to take up more particularly a few important points in the operative procedure. It is impossible to tell in any case what operation may be necessary, but fortunately for both the operator and patient a simple cholecystostomy is all that is necessary in the greater number of cases; however, it may be necessary to do a cholecystectomy or a cholecysenterostomy and the operator must be prepared for every emergency. I have adopted the incision of Bevan, the lower end of the vertical incision being carried outward and the upper end upward and inward. I have never found that the long incision complicates recovery, or tends to hernia, if proper care is taken in sitiching the wound. The incision should be long enough to enable the operator to make a careful examination of the gall-bladder and the bile tract. I generally make an incision about three inches long and extend it as much as is deemed necessary. I saw Kehr operate one case in which the incision seemed to be at least ten inches long. I have never had a post-operative hernia in these gall-bladder cases. A fistula will not result if there is no occlusion of the ducts and we are careful to stitch the gall-bladder to the aponeurosis. The most important thing in gall-bladder surgery is thorough drainage; I believe better results will be obtained in all cases that are drained, and I now invariably keep up the drainage until the inflammatory process subsides. The operation of choice is cholecystostomy, but the tendency is more and more toward cholecystectomy in all cases; but I think this should only be practiced when there are positive indications. Dover says, "I believe that the cure obtained by the judicious application of the aseptic scalpel of the surgeon in many cases excels nature's cure. I entertain the same view in connection with the appendix, as those recntly exploited by Sir William Macewen, who has de-

scribed as his opinion that the appendix has a valuable function as a part of the digestive apparatus. I have always thought it unwise, yea, I may say meddlesome on the part of surgeons to remove the appendix in performing an abdominal operation for some other trouble simply because the appendix was so accessible, and I entertain the same view in connection with the gall-bladder."

It is now generally conceded that cholelithiasis is a surgical disease and the stones can not be dissolved with medicine, although Richardson says, "It is evident then that by administering sodium glycocholate, it must be possible not only to prevent the formation of gallstones, but also to dissolve those that have formed.

Brockbank says, "Not one new remedy of any great value has been discovered in the past one hundred and fifty years."

I want to give a short report of a few cases:

Case 1. Was called to see Mrs. S. about midnight of August 26, 1904, aged sixty-four; she is the mother of eight children. I obtained the following history: In 1899 she had a severe case of typhoid fever and was confined to her bed eleven weeks. In May, 1900, she was seized with severe pain in the stomach, which lasted for about one-half hour; the pain was followed by vomiting. These attacks occurred during that year three or four times. One attack was accompanied by a slight jaundice; the appetite was always bad for several days after these attacks. The attending physician pronounced it neuralgia of the stomach, and gave a hypodermic of morphia to relieve the suffering; she had these attacks at intervals of a few weeks; once she went for four months without an attack; when she congratulated herself that she was cured. At the time of my visit she was suffering excruciating pain in her stomach and back; she had a temperature of 101 degrees; the entire upper abdominal zone was tender on pressure. But the greatest tenderness was found over the gall-bladder; a diagnosis of gallstones was made which she did not accept readily, as her case had always been pronounced neuralgia of the stomach. She refused operative procedure which was advised, and I resorted to all the known remedies as olive oil, phosphate

of soda, salicylic acid, etc. After a trial of three months she finally consented to an operation. She was removed to my hospital and was operated November 10, 1904. Upon making an incision through the right rectus muscle I found the gall-bladder somewhat contracted and greatly inflamed. Upon incising the gall-bladder, I removed one hundred and two stones. No stones were found in the duct. A drainage tube was placed in the gall-bladder; the gall-bladder stitched to the aponeurosis, closure of the abdominal wound by through and through sutures. As my assistant remarked she never had enough symptoms after the operation to make it interesting. She made an uninterrupted recovery; the appetite has been good; the stools of normal color and no constipation; there has never been any return of the symptoms.

Case 2. Mrs. Y., age 32; mother of two children, had a severe attack of catarrhal jaundice about five years ago; since that time she has suffered a constant pain in the right hypochondrium opposite the ninth rib; she complained of a dragging sensation in the side, with intense burning. Had indigestion, coated tongue and bowels constipated; losing strength and weight gradually; she was brought to my hospital February 2, 1905. I made the usual Bevan incision; there were adhesions with the stomach and duodenum, which were separated. The gall-bladder was inflamed and thickened. I opened the gall-bladder which contained about one-half ounce of thick, glairy fluid. A drainage tube was placed in the gall-bladder, which remained eleven days. She remained in the hospital four weeks, at which time she was discharged, and has had no return of the symptoms. She has steadily gained in strength and weight.

Case 3. Mrs. C., age sixty-four years, of Marietta, Ind., was referred to me by Doctor Walter C. McFadden. Has been suffering with a pain in right side for two years, but no distinct history of gallstone attacks. About one month prior to my first visit she became jaundiced and at the time she was suffering with cholemia; the itching was intense night and day from which she could get no relief; the stools were of a grayish color, entire loss of appe-

tite, and could get no sleep. She was taken to my hospital and operated April 1, 1905. The gall-bladder was distended, from which I removed fourteen and a half ounces of fluid. I also removed a stone about the size of a quail's egg from the cystic duct. It was not necessary to open the duct as the stone had barely entered the mouth of the duct, and I was able to work it back into the gall-bladder. The head of the pancreas was slightly enlarged. At the time of operation, owing to her condition, it was deemed unwise to do an anastomosis of the gall-bladder and duodenum. A drainage tube was placed in the gall-bladder and the gall-bladder stitched to the aponeurosis. On about the third day the jaundice began to gradually disappear and with it the pruritus; appetite improved and strength returned; on the twelfth day she sat up for about one hour; at this time, about two months after operation, the drainage continues; the head of the pancreas is constantly enlarging and we have a well-marked case of cancer of the pancreas. Mayo Robson says, "That in all cases of distended gall-bladder accompanied by jaundice, is not due to obstruction of common duct by the stone, but is due to cancer of the pancreas or the common duct."

Case. 4. Since writing this paper I operated Miss L., of Vincennes, Ind., who was referred to me by Doctor S. C. Beard. Age 35; mother died of cancer of the stomach; had a severe attack of pain in July, 1901; which was referred to the stomach and radiated to the left side; she had repeated attacks which occurred with increased frequency, the attacks were followed by intense vomiting and retching; some pain under right shoulder blade. I operated her last Saturday morning; upon making an exploratory incision found evidence of a gastroduodenitis. There were dense adhesions which were broken up with difficulty; the gall-bladder was inflamed; the pancreas was somewhat thickened; cholecystostomy was performed, and the drainage is still in; she has done well since the operation, but what the result will be in this case it is too early to determine.

DISCUSSION ON THE PAPERS OF DR. M. A. AUSTIN AND DR. T. C. KENNEDY.

Dr. W. H. Link, of Indianapolis: Mr. President and gentlemen, it is hard to tell where to begin in the discussion of these papers. The first paper is very exhaustive and touches almost every point that is known in regard to liver or gall-bladder disease; but this is a new surgery, and until surgeons have operated upon the liver as often and as freely as they have upon the appendix, and the knowledge is as completely disseminated among the general practitioners, we will all be working along to some extent in the dark. The great trouble about securing an operation for liver or gallstone disease is the lack of knowledge that exists among the laity, and this only reflects the knowledge of the general practitioner and of the majority of surgeons, because we have not been investigating the surgery of the liver heretofore as extensively and as freely as we have other diseases; and I have found that where we most all fall down in our diagnosis of gallstone disease is not after they get the colic and those fearful attacks of pain in the stomach, attended by vomiting and general prostration, but in those preliminary symptoms which are invariably referred to the stomach; you hear that this person is subject to neuralgia of the stomach, and another one has bilious colic, and another can eat nothing that will agree with him; as soon as they put food in the stomach they have chronic dyspepsia. Those are common premonitory symptoms of gallstones that every patient has before they get to the point where they begin to have those fearful attacks of colic that cause them to send for the family physician, who in his turn then readily recognizes the presence of gallstones, and calls in a surgeon to do an operation. We want to dwell more particularly upon these premonitory symptoms, and impress ourselves and the general practitioner with the great importance that they have in pointing to the existence of the gallstone disease. In an operation for gallstone sometimes a man is mistaken in his diagnosis, and when he opens the abdomen he does not find any gallstone; but the operation is just as well indicated as if he had found gallstone, because you may have that same pain

from cholecystitis, and then you have the engorged condition of the liver, and drainage is just as much indicated for the relief of those symptoms as if the patient had gallstones; hence one need not withhold an operation for any one suffering with disease, or with symptoms of the kind that we usually find along with gallstones.

Now, then, as to whether or not the gall-bladder should be removed. Surgeons, even those of large experience, differ in regard to that, but there is one point that there is little difference of opinion about, and that is if the gall-bladder is ulcerated, or badly complicated, a cholecystotomy gives better results than cholecystectomy.

Another thing, the origin of nearly all gallstones is in the gall-bladder, or in the cystic or hepatic ducts, hence if we call gallstone a disease the gall-bladder is the origin of gallstone disease, and it seems a man would be much less likely to have a relapse if you remove the gall-bladder while you are doing the operation; but whether you do that or not would depend upon the necessity of draining the liver as to its condition of engorgement, or whether the common hepatic ducts were patulous. I don't think there is any danger of surgeons getting the furor for operation so bad that they will remove a normal gall-bladder. The surgeon who would remove a gall-bladder when he was doing some other operation, simply because he thought the man might have gallstones sometime, or who would remove the normal appendix because he has opened the abdomen for something else and the man might have appendicitis sometime, would be just as irrational as the man who, doing a hernia, would remove the penis for fear the man would contract gonorrhea sometime. The argument is just as good in the one case as in the other; and I think there are very few surgeons of that kind among us.

Dr. A. W. Brayton, of Indianapolis: Mr. President, in the presence of an audience of this nature, and in the presence of Prof. Bryant, of New York, I take pleasure in calling the attention of those who do not know it to the fact that the patient on whom Dr. John Stough Bobbs, of Indianapolis, first performed

the operation of lithotomy of the gall-bladder, as he calls it, in June of 1867, forty years ago nearly, is living within a few miles of Indianapolis, a buxom widow of some sixty years, and still believing that she has one of those gallstones remaining, and that all the trouble that she has suffered for thirty-seven or forty years is due to the fact that Dr. John Stough Bobbs left one of those gallstones.

Now there is a movement on foot, and I presume at the Portland meeting, that this woman, Mrs. Burnsworth, will be presented there. I am sure it will be a matter of great satisfaction to the surgeons of the State of Indiana and to the profession of the country, to see this woman. There are those here who have met her in my office. She has been under my observation from time to time for some eight or nine years, and she is perfectly able to make the journey, and it may be a pleasure to her, and I am sure it will be a pleasure to us.

This is no myth. This is a matter of history, of record. Dr. John Stough Bobbs described this operation in a paper entitled "Lithotomy of the Gall-bladder" which was printed in 1868 in the Indiana State Medical Society Transactions. I have reprinted the paper within the last four or five years in the Indiana Medical Journal, giving some account of the life history of this noble citizen, soldier and army surgeon, and I sent one to every considerable laparotomist of the world at that time; and while I have not had the pleasure of reading the chapters on gallstones in Professor Bryant's Surgery, I have no doubt he had it in mind at the time he wrote them. In view of the good results obtained, the accurate, careful and scientific description of the case, and the fact that it is so generally recognized that we frequently take up a paper on gallstones and find comments on the operation that John Stough Bobbs made in 1867, in the city of Indianapolis, we feel it is a matter that belongs of right to us, and one that makes us think how little after anyone's studies, or any society by any one of its members, has contributed to the great field of surgery compared with what he contributed to it as is now so universally recognized.

Dr. A. M. Hayden, of Evansville: Mr. President, in regard to the diagnosis of cholelithiasis, if we could take it as a fact that there is no such thing as gastralgia and neuralgia of the stomach, and no such indisposition as acute indigestion, and that an attack of cholelithiasis may come on at any time not necessarily that you may have an attack of pain from an undigested meal and with the same character of pain extending through under the shoulder blades, the diagnosis of gallstones would be made fairly easy. I have done a good many operations myself for gallstones, and I have seen quite a good many done; I have never seen a mistake made in the diagnosis; never seen a case where it was done where there wasn't any gallstones. However, we may have similar symptoms to gallstones produced by cholangitis, from the infection, the germs having been carried into the common duct through the natural opening or through the lymphatic glands, the lymphatic system, or through the blood circulation. It produces a bile or thickening of the bile caused by the mixture of mucus thrown off by the oversecretion of the lining membrane of the common duct that would produce the same character of pain, in passing, that gallstones would produce in passing. I have several times made the diagnosis of cholangitis or gallstones, and operated with the idea of relieving which ever I found. If we get the idea out of the heads of most physicians, or out of the heads of a great many, that we have neuralgia of the stomach or gastralgia and that gallstones, even though you have them, can be dissolved, or be caused to pass by giving large quantities of sweet or olive oil, they will come to the surgeon much earlier and at a more opportune time for an operation. Now, I admit if you give large quantities of olive oil you will get gallstones; the more olive oil you give the more gallstones; but it is simply the coagulation of the oily substances that have not been digested.

The Chairman: I will call on Dr. Austin to close the discussion.

Dr. M. A. Austin, of Anderson: Mr. President and gentlemen, the remaining part of my paper which I was unable to read

on account of the time limit, was the report of twenty-five cases that I have had under observation, a portion of which I have verified by operation; and I take up in my report the various symptoms and have tabulated them according to the manner in which I had them on the chart. I asked to present this paper before the medical section, inasmuch as it was a paper that I considered of more importance to the general practitioner than I did to the surgeon. It is not a paper that I think, from a technical standpoint, would be of any special value to the surgeon, and when the paper was referred I asked for the privilege of presenting it to the medical section, but somehow it was thrown over to the surgical side. I so far have had success with my work, and I feel that a number of these cases, as Dr. Hayden says are not recognized. The more these cases of stomach trouble are observed the more we will have a reference of these cases to the surgeon for permanent relief; and the finding of gallstones is the etiologic factor on which all the trouble had been pending.

The Chairman: Gentlemen, I think it should be something for the members of this association to remember with pride that the first authentic case of gall-bladder surgery was done by Dr. Bobbs, who was one of the charter members of this association. It is now time for adjournment, and I hope you will all be prompt at the meeting tomorrow morning.

LUMBAR EXPLORATORY PUNCTURE.

BY J. A. MAC DONALD, M. D., ASSISTANT PHYSICIAN, CENTRAL HOSPITAL FOR INSANE, INDIANAPOLIS.

In a brief paper on this subject it will be impossible to attempt to review at all exhaustively the literature which is amassing so rapidly upon the analysis of the cerebrospinal fluid and upon its cytology, but I shall attempt to present the operation of lumbar puncture and the more firmly established facts in the pathology as an addition to the methods of precision in diagnosis and as an aid to treatment in a certain class of cases.

The cerebrospinal fluid was discovered in 1774 by Cotugoo. Majendie, by his work from 1825 to 1842, gave us the first accurate knowledge of this fluid, and to Quincke we owe the credit of first having obtained it during life and by the method which bears his name.

Lumbar puncture is so often described as a very simple operation and has come to be performed so commonly that I hesitate somewhat to give time to the description, but I have so frequently heard the statement made that an operator's first attempts had met with difficulty that I wish to devote a brief space to the technique.

The preparation of the field of operation and of the operator's hands should be as scrupulous as for any other operation. The patient lies upon the side, preferably the right for right-handed operators, with the knees drawn well up in front in order to create the greatest possible spinal convexity and thus separate the laminæ as much as possible, and in this connection I wish to add that there is obviously more difficulty attending the puncture in cases of acute meningitis where opisthotonus is present.

Having found the space between the third and fourth lumbar vertebræ which lies about on a line with the highest points of the

iliac crests and which is conveniently marked by the edge of a sterile towel, or it makes little difference if the next space above is chosen, the needle is introduced at a point one cm. outside of the middle line and with a quick thrust pierces the skin and tissues down to the vertebra; now directing the needle slightly toward the middle line and somewhat upward another thrust drives it home to the spinal canal where, after a little experience, one is able to distinctly perceive by the sense of touch when the spinal cavity is reached. Very little inward inclination of the point is needed, but I have found that, in adults at least, the direction should be rather more upward than is usually advised. Cocainization or freezing of the skin lessens the discomfort of the operation to a degree. I prefer the lateral to the upright posture, as I believe there is less liability of syncope and fewer assistants are needed. It is sometimes necessary to raise the patient to the sitting posture after insertion of the needle in order to induce the fluid to run out, and I believe this maneuvre is preferable to aspiration. A fine trochar gives better results than the exploring needle, since the latter scoops up a small amount of blood during its introduction, thus adding red cells to the centrifuged specimen.

From 8 to 30 cc. of fluid is withdrawn, the celerity with which the fluid escapes depending on the intraspinal tension. The trochar is quickly withdrawn and the small wound sealed with cotton and collodion.

I have never experienced any bad results from the operation beyond partial syncope in one very nervous patient and in two cases there was complaint of headache and stiffness of the neck muscles for three or four days. The operation should be performed with caution or not at all, we are warned by Widal, in cerebellar tumor or disease of the posterior fossa.

As a starting point to any study of the pathological conditions found in the cerebrospinal fluid it is essential that we review briefly the normal fluid, and in doing this I shall draw freely from the excellent paper by Dr. F. W. Mott in a recent number of the British Medical Journal.

This fluid differs from any of the other body fluids. It varies

in amount normally from 120 cc. to 150 cc. It is slightly alkaline, specific gravity of 1,006 and is devoid of all corpuscular elements. It contains traces of proteid, which is a globulin, and there is no fibrin ferment. It is a true secretion, not an excretion. The principal inorganic constituent is sodium chlorid, but there are also traces of carbonates and phosphates, also a reducing substance, probably dextrose, which is increased in diabetes. Urea is present in uremia.

The most recent experiments seem to show that the origin of the fluid is the secretory activity of the epithelium covering the choroidal plexus of the lateral ventricles. As to the ultimate destination of the fluid, some believe that it escapes along the lymphatics of the cranial and spinal nerves and thus reaches the receptaculum and thoracic duct; others, and Cushing's observations lead to this view, hold that that part of the fluid contained in the cerebral subarachnoid space escapes by the perivascular canalicular systems and into the longitudinal sinus.

At any rate, normally, production and escape seem to be so well balanced that the central nervous system is constantly surrounded, especially at the base of the brain, by a water bed at a constant pressure, and this fluid can continually circulate and act as a medium of gaseous exchange between the blood and the tissues.

The pathology of the cerebrospinal fluid is of comparatively recent date, but since many brilliant workers have entered this field it is not unlikely that we are on the eve of very valuable discoveries. As yet, however, the results have been to an extent disappointing, and much remains to be done both in chemical and cytological investigation. The facts so far established are mainly as follows:

The amount of fluid varies in pathological conditions with the size of the brain, hence in disease marked by atrophy of the brain or destruction of its substance we expect to find, and do find, increased amount of fluid, and this is demonstrated by the increased celerity with which it escapes by the canula, and here we have a direct index to the intraspinal pressure. The increase in pres-

sure varies, from escape drop by drop rapidly to squirting several inches from the trochar.

In paresis, especially in late cases, high pressure is the rule, being increased in two-thirds of Shafer's 25 cases and reaching as high as 204 mm. of water.

The fluid in these chronic cases also contains coagulated proteid varying in amount up to 3.5 per cent. This is attributed to breaking up of brain substance and to inflammatory exudate. Of course, in the more acute inflammatory cases albumin is present in great amount.

Turning to the cytology. As I have stated, normally there should be none or very few cells in the cerebrospinal fluid, or as Dr. Hastings says in a paper by Dr. C. L. Dana, the normal fluid shows after careful search through three to six slides prepared from the centrifuged specimen not over 10 to 12 lymphoid cells and red cells. Widal and others have shown that leucocytosis of the fluid is one of the earliest signs of organic disease of the central nervous system. The acute diseases are associated with polymorphoneuclear and the chronic with lymphocytes. In the chronic diseases, in which the membranes are affected, the mononeuclears are in evidence as in syphilitic meningomyelitis, tabes, general paresis, disseminated sclerosis and herpes zoster. In functional neuroses and psychoses and in neuritis there is no lymphocytosis of the fluid. The conclusions drawn by Widal, Concetti, Mott and others are as follows:

a. Lymphocytosis of the cerebrospinal fluid points to either a chronic organic disease of the nervous system or its membranes, toxic in nature and accompanied by destruction of brain or cord substance or to tubercular disease;

b. Predominance of polymorphoneuclear cells is a strong argument for the belief that bacterial invasion of the nervous tissue or its membranes has taken place.

c. The presence of endothelial cells points to a mechanical origin.

Reviewing the report of 134 cases by Widal, 33 cases by Frankel, 22 cases by Dana, and numerous others, we find that

lymphocytosis is the rule in general paresis, tabes, syphilitic-meningomyelitis, herpes zoster and syphilitic brain tumor, while findings have differed to some extent or the character of the cells is not stated in cases of spinal gliosis, hemiplegia and alcoholic insanity. The number of cells varies from few to great numbers, varying with the duration of the disease. Widal finds lymphocytosis in 37 out of 38 cases of tabes.

It would seem that the chief value at present to the practitioner lies in the fact that cell increase is an early sign, especially in paresis and tabes.

Of my own cases, ten in number, I have recorded the following:

1. General paresis, symptoms dating six months. Fluid slightly increased in amount, clear, colorless, 8 cc. withdrawn. Moderate number of cells, which stained specimen shows to be lymphocytes, albumen present.

This case, it is seen, is quite an early one, and I was able to examine it through the kindness of Dr. P. J. Watters.

2. General paresis, two years' duration.

Fluid slightly increased, 30 cc. withdrawn, clear, colorless. Large number of cells, which in stained specimen are seen to be lymphocytes in all stages of degeneration. Albumen, 75 per cent.

3, 4, 5, 6, 7. General paresis, in late stages. All showed increase of cells which were lymphocytes, albumin and increase of fluid.

8. Combined sclerosis. Very slight, if any, increase of fluid, which ran at 20 drops per minute, clear, colorless. No cells were found in one examination.

9. Syphilitic lateral sclerosis. Slight increase of fluid, 8 cc. withdrawn. A few lymphocytes found.

10. Multiple syphilitic brain tumor. Fluid decreased in amount, not enough being secured for examination. Culture was negative.

11. Acute mania, with exhaustion. Temperature 101, pulse 120. Fluid diminished in amount, no lymphocytes.

12. Tabo-paresis, well advanced. Fluid much increased,

squirting from the canula. Albumen present. Numerous lymphocytes.

13. Senile dementia. Fluid diminished in amount, no lymphocytes.

14. Compression of cervical cord. This patient came to his death by a fall. The cervical cord was compressed by a partial luxation of the vertebra. Puncture two hours after death showed large number of red cells in the cerebrospinal fluid, and this after the fluid had been allowed to escape for a considerable time to avoid all possibility of operative contamination.

Cultures taken in three cases by Dr. Neu were negative.

Of cases of bacterial origin we find that in tubercular meningitis, although it may be impossible to detect tubercle bacilli in all cases by microscopical examination of the fluid, yet according to the inoculation experiments of Widal and Le Sourd positive results were obtained. The value of this point to the diagnostician needs no comment, but I shall call this point to mind under the treatment of this disease.

The diagnosis of epidemic cerebrospinal meningitis by means of spinal puncture has become of so well-established position in clinical pathology that I shall not attempt to discuss it fully here. As Councilman says: "Too much can not be said for the value of lumbar puncture in this disease." It is of especial value in the atypical cases of children.

I have been able to demonstrate in rather an early stage of the disease the presence of the diplococcus meningitidis of Weichselbaum, and regret that I have no specimen to present here.

While the operation under discussion has been used for the most part as a diagnostic or exploratory procedure, it is most natural that one should hope to make it of therapeutic value as well, and on this subject authorities differ greatly, the argument at present centering for the most part about the treatment of epidemic cerebrospinal meningitis.

Of the treatment of the more chronic brain and cord diseases not much has as yet been said.

Of my own cases—two paretics well advanced to tremulous

motor paresis and entire fatuity, and both having had the epileptoid convulsions of such ominous import, after intercranial pressure was lessened by tapping, have been much steadier, less helpless; there have been after five months and four months, respectively, no convulsions, and both patients, formerly confined to bed, are up and about, and though, of course, still very hopeless cases, they are in a much happier plight than before the operation. Whether or not this is a coincidence fitting in with the well-known irregular course of the disease I do not, of course, pretend to say.

Further, a case of combined sclerosis was much relieved of distressing parasthesia and lancinating pains, though I am unable to see why he should have been relieved, since there was little or no increase in fluid. It may have been due to the acupuncture.

More especially with regard to epidemic cerebrospinal meningitis, there is a considerable array of judgment against an attempt to treat a diffuse purulent meningeal disease by puncture low down in the spinal canal, and recalling the post-mortem picture of heavy layers of purulent material lining the meninges, it would seem like "sending a boy on a man's errand" to attempt to drain and introduce medication by means of a small canula at the lumbar region. But in a disease presenting so desperate an outlook we must be very gracious toward even a very puny weapon for the attack.

Dr. Nammack reports from Bellevue Hospital the treatment of epidemic cerebrospinal meningitis by withdrawing fluid and injecting lysol. The first puncture brought pure pus, which was replaced by the lysol solution; there followed amelioration of the symptoms, at the third puncture pure serum was withdrawn. Another injection was given; the patient recovered.

Netter reports seven cases of recovery, five of which were complete, under treatment by lumbar puncture and baths at 100° to 104°, lasting 20 to 30 minutes every third or fourth hour night and day. Nammack reports five cases treated by withdrawal of fluid and injection of lysol 15 c. c. of 10 per cent. solution, lysol

being said to be five times greater in germicidal power and eight times less poisonous than carbolic acid. Of his cases four died, all of which had several complications. Treatment with apparently good results has been by the permanent introduction of a silver canula, thus permitting of continuous drainage and medication by injection. Cases are accumulating rapidly, but not yet in sufficient number to furnish convincing statistics, and considering that the mortality in this disease varies from 20 per cent. to 75 per cent. with different epidemics, it is very difficult to draw conclusions.

It can not be doubted that in this disease two important factors are pressure and sepsis. Dr. Koplick says that he can not say that he has ever cured a case by lumbar puncture, but he has made his patients more comfortable and prevented complications. Hydrocephalus is a serious complication, and the puncture does a great deal in the cases comatose, with high temperature, due to pressure. I have seen one case treated by repeated tapping recover without intraspinal injections, after a most critical illness.

Without allowing oneself to be too sanguine over the lowering of a death rate in a single epidemic of any grave disease (the mortality in Spain by this treatment was only 40 per cent.), one can say that treatment of suppurative meningitis by drainage and injection of bactericidal agents seems an entirely logical surgical procedure, for who can fail to feel the impulse to drain and possibly to wash out a body cavity which has been invaded by the pyogenic bacteria.

Regarding tubercular meningitis, Rossini now reports excellent results in a case of this disease in a lad of 16 years. The case was subacute and not influenced by any of the usual measures. He withdrew 1 to 5 c. c. of fluid and injected into the subarachnoid space a like amount of 1 per cent. iodoformed oil, repeating the procedure at different points every six hours. As an adjuvant, he injected into a vein every second day 1 c. c. of a solution of 1 gm. of iodine and 4 gm. of potassium iodide in 100 gm. of water. The temperature declined the day after the treatment was instituted, and improvement progressively continued. After the fifth

day the fluid was sterile where tubercule bacilli had been demonstrated before by inoculation.

Mauclaire has treated Pott's disease successfully by epidural injections of iodoformed oil.

In the diseases which so often exhibit the evidences of profound toxemia, with grave nervous symptoms, it has seemed to me that attack from the standpoint we are now considering will often be of value. In, for example, the grave typhoid, with semicoma, subsultus and rigidity of back and neck muscles so marked as to suggest the rare typhoid meningitis, I have tapped the spinal canal and removed a considerable amount of fluid, with, it seemed to me, some amelioration of the nervous symptoms. In such a case, since we are not yet willing to accept a view that the cerebrospinal fluid is a medium carrying the toxine to the nervous tissue, is it not reasonable to suppose that increased pressure is responsible for a part, at least, of the symptoms.

Time prevents more than mere mention of the facts that the severe headaches of secondary and tertiary syphilis and the headache of arteriosclerosis have at times proved amenable to treatment by lumbar puncture where all other means had been unsuccessful, and that in Stovain, a recently reported local anesthetic, we have an agent that for spinal anesthesia is said to have none of the objectionable features of cocaine, thus giving to the surgeon a most valuable aid, since spinal anesthesia is simpler, and has in many ways a wider field of usefulness than nerve-trunk infiltration.

In conclusion:

a. Much remains to be found out about the cerebrospinal fluid in disease.

b. As a means of early diagnosis in certain organic diseases of the brain and cord and their differentiation from nervous and pure psychosis. Examination of the cerebrospinal fluid is of great value, since increased amount of fluid, leucocytosis, presence of coagulable proteid and presence of certain substances, for example, cholin, is always pathological.

c. In careful hands this operation is at least as harmless as any of the more common exploratory punctures.

d. Opinion is much divided as to the future of lumbar puncture as a therapeutic measure, but in most cases where it can be used it is at least as good as any treatment known, and where pressure can be relieved or septic material withdrawn it is undoubtedly of value.

c. The procedure is of a fixed value, if it should permit of nothing further than the early diagnosis of general paresis, and thus be the means of avoiding the humiliation of family and dissipation of fortune, so often the work of the unproved paretic.

Further and briefly, lest I weary you, I shall add that Dr. Dana reports a case of contusion of the brain where five weeks after injury the cerebrospinal fluid showed many red cells and 44 lymphocytes per cmm.

This, together with case 14 in my own series, has been of great interest to me, since it offers even more than a suggestion to the surgeon, for if by examination of the cerebrospinal fluid in a large number of traumatic brain and cord cases we can formulate a rule that where actual brain or cord injury is present, red cells do appear in the fluid, much will have been done toward simplifying that great class of indefinite cases appearing under the names of railroad spine and spinal concussion.

It is to be hoped that statistics on this point will appear in the near future.

DISCUSSION.

Dr. Theo. Potter, of Indianapolis: Lumbar puncture, to endorse what has been said, is very much easier than ordinarily supposed. Unless this is realized, men will be afraid to do it, and I think they need not be, for with a little study of the anatomy and with a study of the directions given here it is a very simple and easy thing. The second thing is this: You see how many suggestions are thrown out in the paper. I would suggest, therefore, that many physicians throughout the State should undertake to do lumbar puncture, study it up and find how easy it is, and then get material for examination. Just simply get instruments and bottles thoroughly sterilized, and see that the specimen gets to men like Dr. McDonald and others interested, and thus we can

collect some valuable statistics. You can at once see the possibilities it opens up in a paper like this.

Dr. H. J. Hall, of Franklin: I think a paper like this is very helpful, because it leads out in a new line, and while to many that have not had experience in this line of work it might seem dangerous, yet when you come to the reality it is not so dangerous as we think. I am delighted to hear this paper from one of the younger men. It is along the line of proper scientific investigation, which shows progress in our work.

Dr. F. C. Heath, of Indianapolis: Last week's Journal of the American Medical Association contains a brief review of the report of Dr. Katulli of an instance where lumbar puncture was used in choked disc, the result being a regression. Subsequently, there was a return of the affection, and the final result was not satisfactory. But he mentions another case, in which there was a permanent regression of the choked disc and complete recovery.

CLINICAL STUDIES IN EUROPE.

BY EDWIN WALKER, M. D., OF EVANSVILLE, IND.

Before reading the few notes that I have jotted down I wish to say by way of explanation that I took this trip principally for recreation, and aside from that I devoted most of my time to diagnosis. I am not trying to be a specialist; I am trying hard to diagnose my cases so as to do the proper thing for my patients. I think that is the position of most practitioners who do some surgery.

One need give no excuse for going abroad to study; still the question is often asked, "Do the foreign cities offer greater advantages for study of medicine; why can not you do as well at home?"

Any place which has a good medical faculty is a good place to study, and it often happens that one medical center is better in one branch, while it is excelled in others, so that after all one should first determine what line he will pursue and then ascertain where the masters are. Vienna, for example, a quarter of a century ago, excelled in surgery; but it was not Vienna, but Bilroth and Albert. Today, those great teachers are succeeded by men who have not especially impressed the profession with their worth. Berlin and Vienna, however, do offer some special attractions, from the fact that they have been teaching centers for many years. They have developed the most complete system of clinical teaching, and for years it has been possible to obtain private courses in every department of medicine or the allied sciences. No matter what you wish to learn, you can find one and often a number of instructors who will give you just what you want. I took one course on the "Pathology of Tumors" from a man who was giving a half dozen other courses to classes interested in as many departments of the subject, collecting together in each class those whose interests were the same. This was Dr. Ludwig Pick, who is a private

docent of the university and a man worthy of more than passing mention. Dr. Pick is a master of pathology and at the same time has a faculty one rarely finds of imparting to others. He makes every subject so plain that all can easily comprehend; many of his illustrations are especially striking. For example, he says: "A sarcoma is plain soup, and carcinoma is soup with dumplings." That is, in sarcoma you find a uniform structure, while a carcinoma is always a mixture, in varying degrees, of epithelium and connective tissue.

He has also a happy faculty of gauging the course to the standing of the students, and these vary from the tyro to some men who have deeply studied this fascinating branch. One day an American, who had spent a number of years in the work, was discussing some very rare specimen with Dr. Pick, when a young man in my class asked him why he did not give it to our class: "Because you could not digest it," was the reply. He has had many American students and speaks excellent English.

This system of special courses is not devoid of drawbacks. It is an "industry" and savors sometimes more of commercialism than a scientific enterprise. Everybody gives courses and you can well imagine they vary greatly in quality; some are thorough and try to impart as much information as possible, others do only enough to appear to have earned their money. Many have private clinics which they support themselves, in order to give the clinical material for their courses, and it is often deficient so that the instruction is poorly illustrated and of little value.

Another defect is that the professors and others who make a reputation are more engrossed in more profitable work, and their teaching suffers. They generally contrive to take the classes and the fees, but give as little in return as possible. I heard an American ask another, "What kind of a course does Professor ——— give?" "I do not know," he replied. "But one objection is that he is a professor."

Others, after making a reputation, allow themselves to drift and do not keep pace with the times. The American students have a medical society and through it keep informed, and the poor courses are thus avoided and the better ones are always full.

Such a method of study is open to grave criticism, and many get just enough knowledge to make them quite dangerous to the community; but for those who have done good work before, the advantages are evident.

I have tried to learn to catheterize the ureters. There are few cases, I admit, in which this procedure is indicated, still an accurate diagnosis, in some cases, can not be made without it. I found a man who gave a course on this alone, and who, in a short time taught me the technique and gave me opportunity to do it in patients, until I could do it easily. I have tried to get such an opportunity in this country, but could not find it.

I may remark here that I was much impressed with the superiority of the Nitze cystoscope, as now constructed. It is far superior in my opinion to any other I have seen. I have worked with Kelley's and those made by the Rochester Company, but think the Nitze far in advance. By means of lenses and a prism, it allows one to see a large area of the bladder wall at a time, thus making the examination more rapid and thorough and it is much easier to find the ureters. This instrument is used in the bladder distended with fluid which enables one to easily examine the whole wall.

The endoscope and cystoscope have opened a new era in genito-urinary work.

The diagnosis of a stricture is not made so much with the bulbous sound, but rather the hard and soft exudate is determined by the endoscope. By this instrument also the condition of the lacuna is made known, and they are not infrequently the seat of infection in gleet. Tumors of the deep urethra are also discovered by its use; I saw several cases of this kind.

The cystoscope gives much wider opportunities and, in fact, is indispensable in a large range of cases. The frequency of tubercular diseases of the kidneys and bladder, and especially the latter, was a surprise to me. Since I have been home, I have found three cases of tubercular cystitis, with no evidence of kidney involvement. In neither of these had the disease been suspected.

One case was so interesting I will briefly mention it here. The lady was 30 years of age and was brought for an operation for

laceration of the perineum of third degree. She had some trouble with the bladder at her confinement years ago, and had some trouble at times since, but was comfortable when she came to me. The operation was done and on account of her inability to empty the bladder, she had to be catheterized for several days. Her old trouble returned and I feared she had been reinfected by the catheter. Irrigations afforded no relief, so I made a cystoscopic examination and found some submucous infiltration that looked like tubercular deposits. A careful search failed to reveal the bacilli in the urine. This, however, was not to be expected, as none of the deposits had broken down. I gave a tuberculin test and she reacted promptly. Here was a young and apparently healthy woman, for she looked very well, with what seemed an acute cystitis from a catheter, and but for the cystoscope examination I would never have suspected the nature of the trouble.

Papiloma, carcinomas and other tumors of the bladder can be early diagnosed by the cystoscope.

It is probably in the study of those diseases which usually attack one kidney that the most brilliant work is done. Tubercle, cancer, benign bleeding tumor, stone, and nephritis due to misplaced kidney can not be diagnosed early without its use. In fact, in any renal disease it is highly important to ascertain if one or both organs are affected, and often this can only be done by the cystoscope.

I saw three cases of unilateral disease of the kidney in which all subjective symptoms pointed to one kidney, which the cystoscope showed the other was the affected one.

"Symptomless hemorrhage" has been a stumbling-block which all the rules of Henry Thompson and others have not removed. Most of these cases are rendered clear by the cystoscope. If it is due to lesion of the bladder it can be plainly seen and, if not, by watching the uretheral orifice the affected kidney can generally be determined by seeing the bloody urine issue from it, and if necessary the ureters can be catheterized.

I was surprised to find that chronic nephritis was so frequently the cause of marked hematuria. In one fatal case the hemorrhage

was the immediate cause of death. Both kidneys were involved. In two cases of unilateral nephritis caused by displaced kidney, hematuria was the chief symptom, and they were cured by decapsulating the diseased organ. Dr. Fenwick says that decapsulation is indicated in these cases, but that he has seen no benefit where both are affected. The latter being the local expression of a constitutional trouble an operation on the kidneys is of no avail.

Tubercular diseases of the urinary organs usually begin in one kidney and if it is diagnosed early and the other kidney is good, a nephrectomy is advised. If this is not done the danger is that the bladder and later the other kidney will be involved.

Tubercular disease of the bladder in Germany is treated by local application, silver salts, iodoform, etc., but in London they do not consider local applications beneficial and rely on tuberculin. The best men there are confident that great benefit is derived from it. I saw a number of cases that were doing well on it, and from the recorded histories certainly had greatly improved under its use. I did not know that this disease could last so long, but many of the cases had suffered for years and one man who looked very well and had improved under treatment had suffered fourteen years with tubercular bladder.

I might here refer to studies with tuberculin and other toxines by Wright and Douglas, which have made a profound impression on the profession in London. They have found that the reaction and immunity produced by these substances are accomplished by changes in the blood serum and that by use of large doses, instead of developing the desired quality of the serum, it is destroyed. They recommend, therefore, that much smaller doses at longer intervals should be used, and by this means much good can be accomplished. I am sure from the character of the men who have indorsed this work, there is something in it.

The prostate is receiving in Europe the same studious consideration it has had here. The time has come when in suitable cases, the results from operative interference is satisfactory. The best men are very cautious. In Berlin comparatively few radical operations are done. Freudenburg has perfected the Botini operation

and has done over one hundred and fifty operations with practically no mortality and with good results. He operates under local anesthesia and usually makes a median and two lateral incisions and in one case I saw him make an anterior one also. He claims that there is less shock, the patient is out of bed in two or three days and that the sexual functions are not affected by the operation.

Several cases I followed after operation seemed to do very well, but I had to take his word as to the permanent results. He impressed me as a thoroughly honest man and was very frank in the discussion of his cases. I am convinced that he does have many satisfactory results.

In Paris, perineal prostatectomy by Proust's method is the favorite operation and is frequently done. I did not visit Paris, but Dr. Schelley, of Budapest, who had recently studied in Paris, told me that French surgeons were much bolder than the Germans were and that many radical operations were done. I have not Proust's latest report, but if I remember correctly his mortality is seven or eight per cent. Freyer, of London, and many of his colleagues, are doing the suprapubic enucleation. I saw his specimens and a number of his operations and observed the patients afterward, besides saw some of his older cases, including the first case he operated on. His mortality is eight or nine per cent., but not so high in the later operation. He removes the entire gland and the prostatic urethra and ejaculatory ducts with it. The rapidity of the operation is quite remarkable, taking not more than ten to fifteen minutes. The removal of the prostatic urethra does not cause any trouble, they state. Freyer has had over one hundred and fifty cases, in none of which stricture has followed the operation. Moullin, however, has reported one case. Freyer and other surgeons of St. Peter's Hospital are quite enthusiastic about this operation and claim that in favorable cases the mortality is very small.

In Berlin diseases of the stomach and intestines have been studied assiduously by several thoughtful observers. Ewald and Boas, of the older men, are known the world over, while Conheim and Kuttner are doing the leading work at this time.

This subject in most of our books is confused. So much has been written about diverse methods and tests that it is almost impossible to get anything definite from them. The courses given by the last mentioned gentlemen are excellent, in that they give in a concise form the essentials, giving only the best tests and methods. I will try to give you a few of the points which impressed me most.

In the physical examination we were taught to determine the habitus which was described as "normal habitus" and "habitus enteroptoticus." In the former, the costal angle was large and the distance from the umbilicus to the ensiform cartilage is shorter than the distance from the middle line to the anterior axillary line.

These individuals are exempt from functional diseases, and if they present themselves with stomach trouble it is practically always organic.

In the latter, the costal angle is acute and the distance to the umbilicus greater than from the middle line to the anterior axillary line. These suffer with functional diseases and are practically exempt from organic disease. They have the displaced organs, specially the stomach or kidney. I did not, in the clinic, see an exception to this rule, and I think they must be rare.

They do not believe much in gastralgias. Painful affections are due generally to organic disease of the stomach or colon, or gall-bladder.

A diagnosis of functional neuralgia of the stomach they will not tolerate. These pains, they claim are practically always due to organic diseases.

Diseases of the small intestines, such as enteritis and intestinal indigestion are not attended by pain, patients complain of a full feeling, only.

Dilatation of the stomach is a comparatively rare trouble and is produced by organic stenosis of the pyloris; it does not arise from functional diseases, or atony. These are considered rare exceptions to this rule. Most of the cases of pronounced dilatation are only a displacement of the viscus in those who have enteroptosis.

Stagnation always means organic obstruction of the pyloric open-

ing. If, therefore, food is found in the stomach in the morning which was taken the evening before, say over eight hours, the pylorus is narrowed or closed by a growth, cicatrix or inflammatory swelling. This condition is never due to functional disease or weakness or atony of the muscular wall. If stagnation occurs and there is free hydrochloric acid, the disease is generally benign; if it is absent, it is malignant in 99 per cent., while excess usually means ulcer.

They have a nice way of determining the motility and secretion of the stomach by giving a test supper, with a few raisins and a test breakfast the next morning. When the fluid is removed, if the raisins are detected, we know that stagnation exists and the usual tests for the secretions are proceeded with.

There are cases in which it is desirable to test for pepsin, renin, lactic acid, and by the microscope detect the presence of sarcinæ and the Oppler-Boas bacillus, but in the vast majority the knowledge of the total acidity and the amount of free hydrochloric acid is all that is of value to the clinician.

Few drugs are used in the treatment of gastric intestinal diseases. Hydrochloric acid, in subacid gastritis, belladonna in excessive acidity, Carlsbad, Kissinger or other mineral waters are about all the remedies prescribed. In diarrhea, tanalbin and ichthalbin, with acorn cocoa, which is ordinary cocoa with some chopped acorns, are given. Diet is the chief reliance, and as a rule, they allow more food and at shorter intervals than we do. Nearly every diet list provides for five or six meals daily. In the treatment of ulcer they allow some food from the start, and at all times more than we do.

In the exhibition of purgatives their practice is different from ours; they very seldom give them. A dose of castor oil for an acute indigestion is about all. Purgatives, Conheim claims, cause much of the gastric and intestinal disease and should not be used.

Constipation, he says, is of two kinds; atonic, due to inaction of the muscular coat of the intestines, and spastic, due to a spastic contraction of the muscular coat of the colon. The case is treated by diet suitable for each, and hygiene; never by cathartics. Opera-

tions on the stomach are not encouraged. The results in cancer have been worse than useless. Some one says the diagnosis of cancer of the stomach can never be made too late. Life can be prolonged and more can be done by careful treatment than by surgery. Conheim practically limits surgery of the stomach to cases of benign occlusion of the pylorus. If anything will pass, he claims that, in a large percentage, by diet the stomach can be made to do its work well.

The muscular coat gradually hypertrophies and compensates, just as the heart does in aortic stenosis. It seemed to me that the teaching is ultraconservative, but I did see some wonderful improvement in cases managed in this way.

Surgery of the stomach, I am sure, is not as large a field as we have been taught in this country.

In closing I can not help but speak of one other thing very pleasant to me as an American; that is the kind treatment I received everywhere, but especially in England. It seemed to me the English surgeons vied with each other to be pleasant to all American visitors, and Dr. Reginald Harrison and Mr. Fenwick were pleasant to a marked degree. Dr. Fenwick was about to do on operation for strangulated hernia. He said in one of the other operating rooms they were preparing to do an operation for stone in the ureter and asked if I wanted to see it. I could not find the clinic and came back and took my place in the room. He looked up and said, "Didn't you find it?" He got down from his table and walked a hundred feet to show me where the room was. Further, in asking questions about operations he was very kind. He asked students to stand upon stools right beside him and gave you every opportunity to see everything. Dr. Fenwick's kidney operations are wonderful, and especially his diagnostic work in the most obscure cases, his diagnosis proving perfectly correct in nearly every instance.

DISCUSSION.

Dr. A. C. Kimberlin, of Indianapolis: One feature brought out in the paper needed more emphasis, and that is the use or abuse of cathartics. It recalled to my mind an experience last year in the

City Hospital at Indianapolis, in which the internes had acquired the habit of giving laxatives in convalescent typhoids. It being my first term there I didn't say much, but watched results. My attention was attracted to the frequency with which they had a rise of temperature after administering a cathartic. This was stopped by the use of castor oil when needed and enemas, and we had better results. This has quite a significance in acute cases. In chronic cases, in cases of colitis, I have observed where we have disturbed secretion, constipation alternating with diarrhea, we are apt to treat the constipation violently, and we will have a rise of temperature after administering cathartics running over two or three days, showing that the practice is a mistake. Castor oil will give a minimum of evil results.

THE DIAGNOSIS OF INTRACRANIAL COMPLICATIONS OF SUPPURATIVE EAR DISEASES.

BY JOHN F. BARNHILL, M. D., INDIANAPOLIS.

As a preface to the body of the paper, the following brief statistics on the subject may be quoted.

Hassler states that of 81,684 ear cases treated there were 116 deaths due to intracranial extension. Of these 48 died of sinus thrombosis, 28 of cerebral abscess and 40 of meningitis.

Koerner reports that in 115 post-mortems, death being caused by ear extension, 41 died from sinus thrombosis, 43 from brain abscess and 31 from meningitis.

In an exhaustive article on the statistics of this subject, Pitt reports that of 9,000 autopsies made in the hospitals of London, the records representing the consecutive ones, and therefore was for deaths from all diseases, just as they naturally occurred, 57 were due to suppurations in the temporal bone or one such death in every 158 running hospital cases, distributed as follows:

Forty-eight died of sinus thrombosis;

Twenty-eight died of cerebral abscess;

Forty died of meningitis.

Koerner, of Rostock, who has compiled most extensive statistics, shows that more than six of every 1,000 deaths from ear diseases is the result of brain abscess.

This frequency with which otitic brain abscess and sinus thrombosis is met justifies the presentation of the main features indicative of the presence of such complication. The symptoms of intracranial involvement are so obscure throughout the earlier and often the greater part of their course as to remain entirely unsuspected by the attendant until a time when the extension is so great as to render the help of the physician of no avail; or the symptoms representing the intracranial involvement may be

entirely mistaken for other ailments, and the serious nature of the trouble not comprehended until too late to be of any service to the patient. In view of the fact that, when untreated, infection of the cerebral contents proves almost without exception fatal, but that when early recognition of the invasion is made and prompt surgical measures taken for relief more than half of all cases promptly and satisfactorily recover, no pains should be spared in any suspected case to investigate and interpret every symptom at its earliest development, and to properly record the same, to the end that when sufficient evidence is present to justify it surgical measures may not be delayed.

The latest pathology of brain and sinus infection points clearly to the fact that the entrance of the virus into the cranial cavity is through some one of the several open sinuses which surround, practically, the base of the brain, viz., the mastoid antra, middle ears, ethmoidal cells, frontal sinuses, antrum of Highmore, and sphenoidal sinuses. Those practicing the diseases of the upper air tract find that the above-mentioned cavities are suppurating with great frequency, and often their mucosae are polypoid; the bony walls are also often denuded of their mucous lining, and not infrequently areas of bony necrosis are found connecting a cavity directly with the cranial structures, and thus permitting the free entrance of septic sinus contents directly into the cranium.

In the diagnosis, then, of any intracranial complication the previous and present history of the case as concerns these open sinuses becomes of first importance, since practically all statistics agree that the presence of suppuration in these localities have been found in the majority of all autposies in which brain abscess, sinus thrombosis and meningitis have been found. Nor is it necessary that the patient give a present history of suppuration, because, and especially is this true as pertains to the ear, the statement may be made by the patient or his friends that, whereas there was once a discharge, that lately the suppuration has apparently wholly ceased; that therefore no thought of connecting former running ear with the present trouble has been entertained, and can only be found out by careful questioning and thorough

examination of the parts. I lay great stress upon this fact of the denial of ear discharge, because such denial was made in three cases of brain abscess which I have seen, in which operation proved the presence of chronic suppuration, necrosis and choleteatoma. In these cases the pathologic conditions present were not productive of large amounts of pus, and the trivial quantity appearing in the external auditory meatus was readily dried into crusts which were easily mistaken for hardened earwax.

It should therefore be stated that no diagnosis should ever be regarded entirely satisfactory that does not include a thorough inspection of all the sinuses, and especially those of the ear. Since the symptoms of the three principal infective diseases under consideration vary very greatly, each will be considered by itself. It should be known that the symptoms of meningitis may complicate either those of brain abscess or sinus thrombosis, and so complicate and mask the real trouble as to render exact diagnosis difficult or impossible. It is also possible in any case that serous accumulations due to tubercle, or that the pressure of a brain tumor, may cause localizing phenomena of such nature as to render exact diagnosis most difficult.

SINUS PHLEBITIS AND THROMBOSIS.

The cause of this ailment may be briefly stated to be an infection of the vein arising from wounds about the head and neck, deep infections of the neck, infections of the tonsils, the nasal accessory sinuses, erysipelas, and suppurations in the temporal bone, which latter cause is regarded by otologists as by far the most frequent of all.

The symptoms of sinus thrombosis are in the later stages most pronounced and usually unmistakable, the result of the general pyemic condition of the patient at this time. It is of the utmost importance, however, to the success of the surgery of this most fatal malady that a diagnosis shall be made before the disease has so poisoned the patient as to present symptoms which would be easily understood by even the indifferent diagnostician, for early diagnosis, plus competent surgical interference, equals com-

mendable results, and late diagnosis, plus either the most skillful surgery, or no surgery, is apt to result in disaster. The early recognition of the extension of any septic condition to the intracranial structures is usually difficult, and this fact has been spoken of as the weak point in the history of intracranial disease. In the very beginning of sinus thrombosis, when the thrombus is yet incomplete, and before disintegration has set in, exact diagnosis is usually impossible. However, a discharging ear can be found in nearly every case, and, when present, there has almost certainly been a complicating mastoiditis, with its well-known symptoms. There may be suspicions of chilliness or even rigor, together with moderate rise of temperature, pain and tenderness, but all these could be entirely accounted for by the presence of the ear and mastoid diseases. The patient appears, however, to be suffering from a more depressing ailment than mere suppurative otitis, complicated by simple mastoid inflammation, and when these latter ailments are and have been persistently and incurably present, exploration of the mastoid is entirely justified, and a complete mastoid operation becomes, therefore, a diagnostic measure of first value, in the earlier stages of a suspected sinus involvement. If such involvement be found not present the operation is a prophylactic measure of greatest importance, as I have had frequent opportunity to observe in the very considerable number of cases in which, during the operation, I have found the bone carious or necrosed over the sinus, which latter was covered with necrotic granulations and bathed in pus, thus rendering it certain that without the free drainage afforded by the mastoid operation the sinus must soon have become infected, thrombosed and putrid.

In the second stage the thrombosed sinus begins to soften and disintegrate, and septic portions are swept into the general circulation. The symptoms indicative of this fact, while more easily interpreted than those of the earlier stage, are by no means pathognomonic, and may yet be very misleading. The condition presented is one both general and local—general, due to pyemia, and local, resulting from the circulatory disturbances, both in-

side and outside the cranium, that are incident to the blocking of so large a sinus. Headache, vomiting and dizziness are commonly found, but are such constant concomitants of brain abscess that of themselves they could scarcely be counted as valuable diagnostic aids. Outside the skull the occurrence of the following symptoms should be noted, if present, since they have valuable diagnostic bearing: Swelling or edema behind the mastoid and over the entrance of the mastoid vein; swelling along the course of the internal jugular; edema of the eyelid of same side. The fundus of the eye should be examined, but circulatory changes in the depths of the eye are by no means constant, for in 35 cases marked eye disturbances could be detected in only nine. Hansen found diagnostic evidence of lateral sinus thrombosis present in the fundus in only three of eight cases. Koerner found only one in five cases. Jansen found chocked disc rarely present in simple thrombosis. By far the most characteristic symptoms are the high temperature, with remissions, and the septic chills. The latter, although the most constant, are not invariably present, and Whiting records the entire absence of rigors in 18 cases, and 48 are noted as having had but one. However, there is usually at least one chill in the twenty-four hours, and this is quickly followed by a rise in temperature to 103-104, or even 106, the fever remitting markedly, during which time the most profuse and exhausting perspiration occurs.

All, or even a majority, of the above symptoms are scarcely present in any one case, but if only a few of them are noted in any patient who has a chronic discharging ear, or who has an acute discharge that has pursued a violent course with undue lack of recuperative powers, the involvement of the vein should be thought of. The most accurate observation of all symptoms should at once be instituted and recorded, to the end that an amount of information may be obtained sufficiently early on which to base a positive diagnosis before the hopeless stage of metastasis has been reached.

Diagnosis in the final stage of the disease should not be difficult, but a diagnosis made at this late period is neither commend-

able nor useful. Septic emboli have found lodgment in the lung, producing septic pneumonia, with its harassing dry cough and oppression in the chest; or possibly the emboli have been carried to more distant parts, resulting in multiple metastatic abscesses and death.

Sinus thrombosis may be mistaken for malaria, typhoid fever, acute tuberculosis, and in children for acute digestive disturbances. In some instances the differential diagnosis is not readily made. However, proper energy in using the diagnostic measures now at the command of the profession will seldom fail to clear up the most difficult case in ample time to permit of the successful employment of one of the most triumphant of all surgical procedure, viz., exposure of the lateral sinus and internal jugular vein throughout their courses in so far as found diseased, the removal of their septic contents, and at the same time ligating the channels of entrance for further septic material into the general circulation.

SYMPTOMS OF BRAIN ABSCESS.

The symptoms of this ailment, like those of sinus thrombosis, are preceded and nearly always accompanied by a suppurating ear. The fact that the patient and his friends may deny the presence of such a discharge should never deter the diagnostician from making the most rigid examination of the condition of the fundus of the ear, and ascertaining for himself, first hand and to an exact certainty, the actual condition of the middle ear and its surrounding cells. Every means of examination known to the otologist that will help in the accuracy of this examination should be used, to the end that the information thus gained is positive, and therefore of first importance and greatest value in connection with other symptoms which may be present and indicative of brain abscess.

Brain abscess may result from either acute or chronic suppurative otitis, and the symptoms in this respect vary considerably. I have seen three acute cases, in all of which the ear ailment from the beginning was severe, the pain excessive and the patient

unusually prostrated within a short time. In so far as was noted by careful observation, no symptom arose during the course of the otitis which could have been pathognomonically diagnostic of the occurrence of brain extension, and it was, therefore, not known how early in the history of the ear disease that the abscess of the brain began. The ear symptoms in no case showed any signs of improvement at any time, and the pain about the ear and over the temple was much worse than would usually be expected in uncomplicated ear cases. In one, the worst of the three, this pain was so intense and persistent, and being unaccounted for otherwise, was attributed to suppuration in the mastoid cells, and although there was no pain, tenderness or swelling behind the ear, the mastoid operation was performed, pus in abundance was found in the cells, and assurances given the patient that the cause of the pain had been removed. Such promise was without sufficient knowledge of the case, the pain continuing unabated. Two days later paralysis of the arm of the opposite side, vomiting, unequal pupils, subnormal temperature and unconsciousness developed with great rapidity, and so markedly that the diagnosis of brain abscess was made with little difficulty, and, as proven by operation, with absolute certainty.

The two other cases were less severe as to pain, mastoiditis was present in each by the tenth day, and symptoms of brain irritation and pressure followed rapidly. Rigors were not prominent features. Moderate elevation of temperature was at first present, followed by subnormal. Likewise an accelerated pulse, which later was quite slow. Headache was present in all, and, in each, was far forward and about the brow. Each case at some time vomited. Only one of the three had any irregularity of pupil, or marked paralysis of any muscle or group of muscles. The reflexes were highly exaggerated in each. The diagnosis of brain abscess was made upon the following points: (1) A case of acute otitis media suppurative, violent in every respect; (2) the headache, onesided and about the orbital process; (3) subnormal temperature and pulse; (4) exaggerated reflexes; (5) vomiting; (6) exploratory operation.

If the abscess is the result of chronic suppuration within the temporal bone, the primary disease may have preceded the brain abscess only a few months, or the ear may have been discharging many years. There is usually very little evidence in or about the ear itself, further than the discharge, to warn either the physician or his patient of the approach or existence of serious intracranial disease. Many recorded cases show that the patient has followed his usual occupation often up to the day, or even the hour, that he is stricken down with the severe and fatal complication. Post-mortem examination has demonstrated the fact that these abscesses must have existed for a long time, their presence being absolutely unsuspected by any one. It is believed, however, that greater care as to the examination of the ear disease, and of the local and general symptoms produced by the brain extension would have made it possible to have reached a diagnosis of the true ailment before the fatal symptoms were present, and at a time when well applied surgery would have ben worth while. It is doubtful if the physician who stands idly by as the attendant of one of these cases, and permits the malady to go on to a fatal issue without recognizing its nature, can lay claim to better management than could the Christian Scientist who denies the existence of all disease.

The symptoms of brain abscess in the earlier stages are like those of sinus thrombosis, in the respect that they are often very indefinite. There is, however, probably enough evidence present in the majority of cases to cause the attendant to suspect the existence of brain trouble, and if he be alert as a diagnostician, to cause him to give the closest heed to each symptom as it develops, to interpret and properly record the same. Hemicrania is seldom or never wanting, appearing as an early symptom and persisting throughout. It is seldom complained of over the site of the abscess, and may be quite a distance from it, as in one of my cases, in whom the pain was persistent and severe over the region of the frontal sinus of the same side of the head. Such a persistent headache in connection with a foul-smelling ear in which necrotic bone, granulations and cholesleatoma is discovered to be

present, should not fail in any case to cause the medical attendant to think of brain abscess. Irritable disposition of the individual has also been noted, but is usually most prominently spoken of after other and graver symptoms have developed, those observing it earlier thinking little of it at the time. I believe as an early symptom, and taken in connection with those mentioned above, that it has good diagnostic value. The temperature is either normal or slightly elevated in the beginning, but as the abscess enlarges and brain pressure becomes a prominent symptom, there is almost certainly a subnormal body heat, and this fact becomes sooner or later a most valuable diagnostic one.

Accompanying the subnormal temperature, the pulse is greatly slowed, running as low as 60, 50 or even 45 per minute. These circulatory and calorific disturbances may occasionally be accompanied by rigors, but while a chill may occur at some time during the disease it is certainly not to be compared in diagnostic value to that of sinus thrombosis.

Vomiting is a symptom almost certain to be noted at some time during the progress of this disease. It comes on in many cases sufficiently early to become of very great value, provided it is recognized as a symptom in connection with others occurring at the same time. It has been my privilege to be present on many occasions when vomiting occurred, and the term "projectile" used to describe it is not misapplied. However, in the earliest stages there may be retching and the presence of bile in such amounts as to mislead the physician into a diagnosis of intestinal or liver ailment. One such case in which the vomiting was persistent was diagnosed "irritation of the pneumogastric nerve," and this after consultation, and by medical gentlemen of good training.

The fundus of the eye furnishes evidence, which, taken in connection with other symptoms, has important bearings. Such eye changes have been found in about one-half of all the brain abscesses in which careful examination was made.

SYMPTOMS INDICATING IMMEDIATE OPERATIVE PROCEDURE IN BRAIN INJURIES.

BY D. C. PEYTON, M. D., JEFFERSONVILLE, IND.

To determine whether or not immediate operative interference in brain injuries is indicated is a question of such serious magnitude as to require the most careful consideration of each individual case as it presents itself. Not infrequently the life of the patient is in the balance, and is determined by our decision one way or the other. The variety of symptoms presented in this class of cases is so great as to prove most perplexing to the minds of our ablest surgeons, many of whom have found at the autopsy that they have been in error in their diagnosis and decision, so that the writer feels fully warranted in presenting the few facts as he has found them in the operating room and elsewhere, with the hope that the experience herein related may be the means of eliciting such discussion as will throw further light upon the class of cases that has caused him to be greatly perplexed in trying to determine the advisability of an operation. It is the purpose of the writer to discuss this question from a surgical standpoint alone.

There can be no doubt that there is, and always will be, a distinct field for elective brain surgery. It would, indeed, be most unfortunate should there be a tendency to abandon so fertile a field for such brilliant achievements of surgical skill and such good to suffering humanity. Brain surgery has been so firmly established in the past several years, however, that there is little danger now of its position being disturbed except to advance it.

The symptoms which immediately follow as the result of injury to the brain are exceedingly important on account of their diagnostic value in determining the extent and nature of the lesion, and serve to aid us in the questions of treatment and prognosis. We must not forget, however, that the early symptoms may be

misleading, and may not, by any means, reveal the exact nature of the injury, as it sometimes happens that the most serious intracranial lesion may be found to exist in the presence of symptoms which would suggest only a slight concussion, while, on the other hand, a patient may quickly recover from an injury, the early symptoms of which are so aggravated as to give the surgeon serious concern. The early symptom generally observed in serious head-injuries is a state of unconsciousness. It is not easy to determine the full significance of this from the symptom alone. In this connection, the most important question to determine is whether the unconsciousness is due to hemorrhage, or from concussion or contusion of the brain. It is also of the utmost importance to know the manner in which the injury was received. The symptom of unsciousness alone will not reveal whether it is hemorrhage or concussion (except the hemorrahge be from a cerebral artery, as in apoplexy) and as the hemorrhage due to injury is generally meningeal, it does not produce the degree of coma of a cerebral hemorrhage. The manner of approach of the unconsciousness is of importance. Where this does not follow the accident for some minutes or an hour or two, or return of consciousness after a primary loss, to be followed shortly by a reappearance of the former state, is a most important diagnostic symptom. As a rule, where the patient has fallen from a height, striking on his head, we may suspect serious lesion at the base of the brain. Again, a direct blow is received on the convex surface of the skull, in such a manner as to produce a lesion in the cortical or subcortical substance. The nature and location of the blow is of importance, but can not always be relied upon. It may be known that a man has received a blow on his head, but when first observed by the surgeon, the external evidences of it may have been so completely obliterated, or, in fact, may not have existed at all, or may be of such a character as not to reveal the location of the blow, and unless there are present pressure symptoms, or other focal evidences, the surgeon may be deceived as to what has really taken place in the cranial cavity, and while this state of false security lasts, he patiently waits for a return of consciousness, while an increasing hemorrhage goes on within. An increasing hemorrhage,

of course, produces pressure unconsciousness, of if the pressure is from a depressed fracture, the physical condition will disclose the fact, or should there exist marks of violence over the region of the middle meningeal artery, the fact should aid us in our diagnosis. If, therefore, it is determined that the early symptoms of the lesion are from a rupture of a meningeal artery, especially the middle meningeal, the immediate effects may be regarded as most serious, unless relieved by prompt surgical procedure.

The success attending our efforts must, in a measure, depend upon our knowledge of cerebral localization, and right here we are measurably aided by our neuralogical friends. We must be able to determine with accuracy the location of a clot or lesion, else all our surgical skill will fail in the matter of relief to the patient.

We must know that upon the cortex of the brain there are certain areas, not necessarily coextensive with either lobes or convolutions, whose functions are known as the visual, the speech, the auditory, the sensorimotor, of sensation and of smell and taste. Cerebral localization has to do mainly with two fissures—the fissure of Rolando and the fissure of Sylvius. A knowledge of these centers aids us greatly in determining the location of a blood clot, or other brain lesion. With more exact localization; with more precise craniocerebral topographical methods; and with constantly improving surgical technique, the percentage of successes has been increased. The readiness with which the surgeon recognizes the surgical emergency, and the promptness with which he operates, has contributed no little to this success.

Fracture of the vault is usually the result of direct violence applied over a limited surface. Where violence is attended by much momentum, the force is diffused, and a fissure will usually be found to travel from the point of primary inception to some distant region. So a quick, sharp blow produces a local fracture, while violence with momentum, a fissure. It is difficult to formulate a rule by which we can determine the direction traveled by these fractures. Direct violence to the vault from without results in a larger area of damage to the inner table than the outer. Rarely, the amount of violence may be sufficient to break the inner table without fracture to the outer. The blow may not result in

fracture of either table, yet the vibratory change in the shape of the vault results in a rupture of a vessel, with consequent pouring out of blood, or resulting in actual contusion of brain substance and displacement of cerebrospinal fluid and blood.

Again, we may have a transmission of the force to the opposite side of the vault from the point of the receipt of injury, resulting in fracture by contre-coup. Whether this transmission of force is the result of the wave current, or whether it travels by other means to reach the opposite side of the skull, we are certain of the fact that in some way the force of the blow is transmitted to the opposite side, resulting either in fracture or other injuries.

The length of time that may elapse from the receipt of brain injury until active diagnostic symptoms appear, is indefinite, being from a few minutes to several hours or many days.

Borel, as early as 1677, designated a class of symptoms or disturbances the result of contusion of the head, which was neither dependent upon a fracture of the bone nor a tear of the blood-vessels, but was so transitory and of such slight intensity that an actual wounding of the brain could not be its underlying cause. Later when autopsies were more often made on patients dying from injuries of the head, a question arose which has only recently been answered. Following the most dangerous and severe brain symptoms, the most careful autopsy failed to reveal the slightest trace of visible change in the brain of the deceased. In other patients, in whom all brain symptoms were absent, where neither the motor nor the sensory functions had suffered, yet it was found that an extensive brain lesion, probably a large portion of the frontal lobe was crushed to a pulp. So that it is necessary that we be extremely guarded in our diagnosis and prognosis of these injuries.

That the surgical interference is imperative in these cases there can be no doubt. In a condition of hemorrhage of a typical character, we have three consecutive stages that must be recognized, namely; a partial or complete unconsciousness, the result of stunning from a blow; secondly, the recovery from this, and later a secondary unconsciousness coming on either slowly or with marked rapidity, as the result of pressure from a slowly accumulating

hemorrhage, or as the result of an overwhelming hemorrhage, forming a veritable wet blanket over the brain. It is well to remember, however, that in the case of a rupture of a large branch, and especially the main branch of the middle cerebral, you will have such a rapid outpouring of blood as will totally obliterate the period of consciousness between the two, and you will have an overlapping of unconsciousness.

Hemorrhage may be extradural or intradural following a blow upon the skull, with or without fracture, fissured or depressed. The frequency of hemorrhage in intracranial injury is quite marked. Phelps holds that in fifty to sixty per cent. of the cases this factor occurs in sufficient quantity and such relation as to materially influence the final result, and serve as a determinate factor of the symptoms; and that in about one-third of all cases it was either the direct or the sole cause of a fatal ending.

Operative interference is indicated when there are symptoms of compression, whether from hemorrhage, depressed bone, or a foreign body. The greatest mortality is in injuries caused by falls from a height, striking on the head, such as being thrown from a horse, or falling from a building or scaffold. Gunshot wounds of the brain are almost equally fatal. In determining the question as to whether or not operative interference is indicated, it is necessary that we take into consideration the manner of receipt of the injury, the character of symptoms following, and the rapidity with which certain symptoms come on following the accident. If we are called upon to assume the responsibility of a patient presenting such evidences of serious brain lesion as paralysis in some form, clonic convulsions of one side or the other, inequality of the pupils, with possibly unconsciousness or profound coma, and probably with Cheyne-Stokes or stertorous respiration, there is little doubt that the surgeon will readily recognize that surgical interference is imperatively demanded. The writer desires to emphasize the fact that, in his judgment, the danger to the patient of an exploratory opening with an observance of the highest degree of aseptic technique, is infinitely less than the unreasonable delay that is frequently permitted while we await definite diagnostic symptoms. But it is in that class of borderline cases presenting

only a few of the foregoing symptoms, and maybe in an exceedingly mild form, or in the case where it is necessary to depend largely or wholly upon the manner of receipt of the injury, together with its character and location, that we are liable to be misled by an apparently unimportant array of symptoms, and fall short of our duty as surgeons by failing to recognize at the earliest possible time the unusual symptoms pointing to a lesion at some point in the brain that could and should be relieved by operative interference. The writer would urge, therefore, the importance of observing in detail each case of brain injury from the time of his first visit until such a time as he can reasonably assure himself that no injury has occurred within the cranial walls. It is not intended by any means to sacrifice conservatism, but increase its usefulness by adding to it that degree of conservative boldness born of a knowledge of imperative duty, enhanced by a knowledge of anatomy of the brain, together with the significance of a class of symptoms, and the ability to apply the highest degree of surgical technique for the relief of this class of patients.

In this connection, the following report of two cases will be of interest in illustrating in a manner some of the statements contained herein. Three years ago the writer was called upon to attend a man about thirty-five years of age, of remarkably strong physique, who, while in a fight, had been shot with a 38-caliber ball from a pistol, the bullet entering the skull from behind and well up toward the top in about the median line. On examination, it was found that the skull had been literally crushed for a space of an inch or an inch and a half in diameter, the dura being badly lacerated, and many fragments of bone were found approximately two inches down in the brain substance, and with extensive laceration of the brain tissue. These fragments of bone were removed, and the wound in the brain carefully but thoroughly irrigated with a normal saline solution, quite a quantity of the brain matter escaping. The dura was sutured as well as possible, the external wound closed and dressed, and the patient put to bed. The patient made an uninterrupted recovery, and at the end of ten days was able to sit up, and in two weeks left the hospital apparently all right. The only symptom that showed itself

following the operation was on the second day, when the man called attention to the fact that he felt something under his back and asked if it could not be removed. On investigation it was found that he was lying on his left hand, of which he was totally unconscious so far as his hand was concerned, showing conclusively that the arm center in the brain had been slightly interfered with. This symptom lasted for only a few days, when it cleared up. The man was a coal-shoveler on the fleets, and the last heard of him about a year ago, he was perfectly well and suffered no inconvenience from his injury.

The second case is that of a man who, while engaged in repairing an electric light wire one day last winter, fell from a scaffold, a distance of probably twenty-five feet, to the frozen ground, striking on the left side of his head. The only external evidence of an injury was a slight contusion of the scalp on the left side. When seen a few minutes after the injury he presented the following symptoms: Total loss of consciousness, inequality of pupil, the left being more dilated than the right with slight conjugate deviation of the eyes toward the left, eccymosis around the left eye with considerable protrusion of the left eyeball, irregular pulse, and a slight tendency to Cheyne-Stokes respiration. There was a fracture of the left arm and left leg which interfered materially with diagnosing any paralysis which might have followed the injury. Later on it was observed that there was variation in the pupils, the left pupil contracting somewhat, with a slight dilatation of the right. Within twenty or thirty minutes following the accident, he showed marked clonic contractions or convulsions of both the arm and leg on the right side. The knee-jerk was slightly exaggerated on the right, while on the left the result was negative on account of the fracture of the thigh. It was difficult to test his sensory reflexes on account of his profound unconsciousness.

Injury of the left side, probably extensive hemorrhage from the left meningeal artery, was diagnosed, and it was decided to trephine. There appeared no injury to the vault of the skull whatever, both tables being intact. The opening was made a little anterior to the junction of the temporal, parietal and frontal bones on the left side. There was no extradural hemorrhage, although

the dura appeared very tense. On opening the dura it was found that there was some extravasation of blood under the dura which had followed the convolutions of the brain at this point. Simultaneously with the opening of the dura and relieving of the tension, the patient's pulse and respiration became very much improved under the anesthetic. The wound was irrigated with a normal saline solution, the dura saturated, and the external wound closed. The improvement in the patient's condition continued and was even more marked for twelve or fifteen hours following the operation, when he developed what appeared to be traumatic pneumonia, from which he quickly died.

The autopsy showed some laceration of the brain tissue, with rather extensive extravasation of blood at several points, and with a stellate fracture at the base, beginning at the junction of the anterior wing of the sphenoid and frontal bones, running backward through the middle fossa to the petrous portion of the temporal bone, and another line of fracture beginning at the same point and running forward through the floor of the orbit, and a third fracture line running through the cribriform plate of the ethmoid and crossing to the opposite side.

The writer has purposely refrained from taking up at length the various means or instruments suggested for gaining an entrance into the brain. It is believed that each of these various instruments has its advantages in certain cases and its disadvantages in others. This question has been so fully and ably discussed by such men as Keen and Mills and others that it seems unnecessary to consider it only in a general way. In brain tumors and other diseased conditions, the writer is partial to the chisel and mallet; while in brain injuries with laceration and probably wounded vessels with consequent hemorrhage, the trephine and the rongeur are to be preferred, lest by the use of the chisel and mallet a further injury to the already contused and lacerated brain is had, or an already dangerous hemorrhage from a wounded vessel is increased. These are questions, however, to be determined by the operator when he assumes the management of each individual case as it presents itself.

DISCUSSION.

Dr. A. E. Sterne, of Indianapolis: I differentiate injuries of impact and injuries of momentum. The first are those created by a sudden, sharp blow with a hard instrument—a hammer, a stone, or like substance. These injuries are usually expended at the point of the blow. You have the fracture at the point of the blow. As a rule there is no *contre-coup* in these direct impact injuries. There may be penetrating spiculæ into the brain. These spiculæ must be removed, and in this class of injuries we have little or no possibility of error on the part of ourselves as to what we should do. The prognosis is not so bad, in my experience, in injuries of impact.

Then we have, on the other hand, injuries of momentum caused by the weight of the body rather more than by impact with the hard substance. Naturally there is more momentum when the body falls, because there is in addition to the mere impact with the brain the weight of the body to consider. But the momentum injury which does most damage, in my experience, is that which is occasioned by a heavy blow with a dull instrument or weight, such as a common sandbag. Here we have the momentum effect with little or no external evidence of the injury. Some contusion, possibly. Frequently none at all. And the immediate effects are of the general nature which Dr. Peyton described—concussion, coma, etc. There may be no injury within the skull. More frequently there is a fracture of the bone itself, notably the outer table, although there may be a fracture of the inner table and you have profound general symptoms, which indicate (and especially when the coma disappears and then reappears) hemorrhage within the skull and probably laceration of the brain tissue. It is in the latter class of cases where you have laceration of the brain tissue that the diagnostic acumen of the operator is most carefully to be exercised. Then again in these injuries we have profound brain laceration frequently and hemorrhage from the torn pial vessels, which we can not as readily get at as we can with the larger vessels like the middle meningeal or the middle cerebral. It is in this class of cases also that we deal with *contre-coup* most frequently. The weight of the brain seems to be an

important factor in this regard. If any of you will take your head between your hands and give a sudden jar you will feel the sensation of ballotement—the swaying of the brain within the cranium. There is a certain degree of ballotement due to the small quantity of cerebrospinal fluid. This allows the brain to sway to a certain degree. So that when a strong blow is made upon one side the brain bounds to the other side. It is not the impact of the brain on the other side, but the rebound away from the skull which is apt to cause a great deal of the trouble. This was illustrated by the experiment of a French investigator who filled a skull with paraffine and dropped it from a height. The injury was found to be on the side opposite to that on which it had fallen. In these injuries we frequently have extensive laceration of the brain substance.

Basilar fractures of course occupy a place by themselves. They are seldom operable. Fortunately they usually determine themselves by the important symptoms, as hemorrhage from the ear, the nose or the mouth, and the less we do in the way of operative interference the better for the patient.

Now the time of operating is a subject on which I want to say a word. We frequently delay on account of what is called shock, the low condition of the patient. I agree with Dr. Peyton that there is no contraindication as to time of operation in the immediate crisis. We seldom, if ever, increase shock through operation. We have at our command normal salt solution to overcome the danger of heart collapse. We have at our command many other things which will assist us powerfully from a medical standpoint. We have no excuse, to my mind, to delay and wait to see merely on account of the presence of shock. We usually do not do the patient the slightest injury. Frequently we can operate without an anesthetic, or the major portion of the operation, because the patient is unconscious, and in my experience I have yet to see a case in which and from which I had increased shock. On the contrary, where there has been no external hemorrhage the operation relieves the shock, just as it would in a plethoric patient with apoplexy to remove blood. Exploratory incision and examination should be made.

Dr. W. B. Fletcher, of Indianapolis: You probably have all seen some of these prize fights. You occasionally see a man knocked out. He gets a blow and falls and after being taken to one side and bathed he begins to react and comes around and is all right. Rarely in these encounters are there serious consequences. But if I am called to a man who has fallen from a building or scaffold and I am told that he has fallen and become unconscious and remained that way for a while but has recovered and they are able to carry him home, except that there may be some surface wound, and he is commencing to regain normal respiration and the pupils are normal, I would do nothing except to observe whether the temperature was going down, in an hour or two, whether his pulse was in proportion to his respirations, whether there was any irregularity in his respirations. If such serious symptoms continued I would say that man should be operated on immediately. In all cases where the individual has developed these symptoms, a lowering of the temperature, a disproportion between the respiration and pulse, and the respirations became somewhat irregular and much slower and the pulse faster, I would operate. I would take out a large button of bone upon the side I suspected had received the shock of the injury, and if I didn't find it there I would turn him over and remove another large button of bone, from the very fact that I do not believe there is half the risk of opening the brain at any time, except in basilar injuries, that there is in opening the abdominal cavity. I do not think you would run much more risk at any time in opening and making an exploratory incision through the scalp, through the skull, and examining into the brain for injuries, than you do in performing many minor operations. So I think that many surgeons neglect too long; and physicians, too. It is not necessary to send for a surgeon at all times. If you have got a good trephine, better make an incision and find out what is the matter. You are not going to do the patient harm. In some hundreds of operations I have done I do not stitch up the dura. I make the operation quickly and carefully as possible, remove clots, do not replace the button of bone any more, stitch the scalp carefully, put on a simple dressing and let it go. Now that is my belief regarding operations in contusions and blows upon the head.

THE MINERAL WATERS OF ORANGE COUNTY.

BY JOHN L. HOWARD, OF WEST BADEN.

The natural mineral waters of Orange County are practically confined to the Baden-Lick Valley, but in every part of the county where wells have been drilled alkaline, saline and sulphureted flowing wells have been established, the depths varying from 40 to 1,100 feet.

The laity especially, and the majority of our profession have a decided prejudice against drilled wells, hence the large influx annually of health seekers from every part of the United States and Canada to this resort. The drilled wells, while seldom used for drinking purposes, contain practically the same chemical constituents and are less liable to surface contamination than the natural springs, but having been so little used it has been impossible to arrive at any definite clinical conclusion as to their relative merits. Owing to the above conditions existing in Orange County only the natural springs will now be referred to.

Of the ten flowing natural mineral springs, nine of them are in this immediate vicinity—the Lane spring being six miles up French Lick Creek. As they are all similar both in their constituents and in the method of their administration, they may be classed the same. This conclusion being arrived at through long clinical experiences much confusion is caused by the published analyses in the different hotel booklets and railroad circulars, as well as by well-known authorities.

Referring to the 1899 edition of James K. Crook, A. M., M. D., on Mineral Waters of the United States, the French Lick waters are classified as saline, sulphureted; while the West Baden waters are quoted as being alkaline, saline, chalybeate, calcic. "Pluto's Well" contains 256.05 grains to U. S. gallon of solids, Spring No. 5 at West Baden containing 301.87. The French Lick analysis was made by Prof. J. G. Rogers and West

Baden's analysis by State Geologist E. T. Cox. On referring to State Geologist W. S. Blatchley's 26th annual report of 1901, the Pluto Spring has varied widely in solids; Rogers in 1869 estimated 256.02 grains to U. S. gallon; Cox estimated 312.692; Warner & Hoskins later estimated 272.54. Columbus Medical Laboratory, in 1902, 309.673.

The hydrogen sulphide, according to Rogers in 1869, was 25.05 cubic inches, the last analysis by Columbus Medical Laboratory showed only 5.233 cubic inches.

Apropos of the presence of H_2S in these waters, it might be an interesting chemical fact to know that H_2S is formed by the action of water on iron polysulphide.

Also these waters may contain emanations of radium and explain why such unlooked for effects are produced in many diseased conditions.

Blatchley suggests that the comparatively low figure for the amount of hydrogen sulphide gas in the table given by the different chemists is due to the fact that their samples of water were not examined until some time after their arrival in the laboratory, after much of the gas had disappeared. He contends that Doctor Rogers' examinations were made at the well, and his figures regarding the gases are, therefore, to be accepted as correct.

Prof. Blatchley, however, does not account for the wide discrepancy in the solids of the four analyses of this spring. The fact is that the Pluto Spring up to 1897 did contain an enormous amount of hydrogen sulphide, the bursting of H_2S bubbles being plainly heard at the hotel some 300 feet away, this ebullition being constant. In August, 1897, Pluto quit flowing, and has never regained its original flowing level. The gases were lost at the same time, and today Pluto flows at a level 4 feet 8 inches lower than in 1897, and does not contain even 5.233 cubic inches of H_2S at the present time.

It is a well-known fact that both fresh and mineral water springs are very capricious and should not be diverted from their natural channels. This has been forcibly demonstrated at

Carlsbad, the Sprudel spring having disappeared on three occasions in the past century and reappeared each time at a different place. While Pluto Spring varies more noticeably in both solids and gases according to the seasons, it is by no means the only one to be so affected.

Another source of confusion in the various analyses of these waters is due to the fact that all published analyses in the hotel circulars are doctored, padded, faked, or whatever you please to call them; they are not correct, but must suit the advertiser. This is a mistake, as physicians from a distance get erroneous ideas as to their therapeutic value. The concentrated Pluto water of French Lick, while freely prescribed by physicians all over the country as a hydragogue cathartic alone, creates the impression that this is the water as it comes from the earth and advises patients, where a depleting action is to be avoided, not to visit the springs; and, too, the most confusion of all is caused by the French Lick people putting on the market two grades of concentrated pluto—one, two tablespoonsful diluted with plain water as a dose, the other called laxative splits, of which one-half pint is a dose.

As the No. 7 Spring of West Baden has never changed, according to analytical reports, and as the flow is uniform through the entire year, I submit to the Society Dr. W. A. Noyes' report made for Prof. Blatchley in 1901, assuming that this spring represents a typical water of the valley.

Chemical elements found in the water:

	Pts. to 1000.000.	*Grs. to U. S. Gal.*
Silica	7.6	0.443
Calcium	577.2	33.671
Magnesium	22.2	13.312
Sodium	514.1	29.990
Potassium	33.9	1.977
Chlorine	798.0	46.551
Sulphate iron	2,046.0	119.353
Carbonate iron	179.9	10.494
Hydrogen sulphide	32.5	1.986
Total	4,417.4	257.687

Besides the above elements, traces of each of the following were found: Alumina, iron, barium, strontium, lithium, bromine, iodine, phosphate iron, borate of iron.

These elements may be considered as combined in the following manner:

	Pts. to 1000.000.	*Grs. to U. S. Gal.*
Silica	7.6	0.443
Calcium sulphate	1,962.5	114.482
Magnesium sulphate	781.3	45.577
Magnesium carbonate	251.9	14.694
Potassium chloride	64.5	3.775
Sodium sulphate	52.6	3.075
Sodium chloride	1,264.5	73.745
Hydrogen sulphide	32.5	1.896
Total	4,417.4	257.687

These inorganic constituents, according to materia medica, are described as follows:

Sodium sulphate and sodium chloride are chiefly hydragogue purgatives and cholagogues, their local action being immediate. They are also direct stimulants of the intestinal glands.

The sulphate, the chief constituent of Carlsbad waters, is used as a hydragogue in dropsies, especially in ascites from liver disease; in congestion of the portal system; and as a habitual purgative.

The soda salts are stomachic, antacid and alkaline to the blood and urine. They are found peculiarly indicated in a condition of system which may be called the "gouty," the "rheumatic," "acidity" or "chronic derangement of the liver," and which is especially characterized by catarrhs or discharges from mucous membranes, interfering with the functions of the part; by imperfect biliary activity and constipation; and by scanty, high colored, very acid urine. In such a condition great benefit may be derived from a course of sulphated saline waters.

Magnesium Sulphate.—All the official salts and preparations of magnesium are derived directly or indirectly from the sulphate. It is our most common saline purgative, being hydragogue in its action. It is a constant ingredient of patent preparations and

teas used for this purpose, as well as several popular aperient waters of Europe, such as Friedrichshall and Hunyadi Janos, of which it is an important constituent.

Sulphate of magnesia is a mild, painless, non-nauseating purgative, less rapid in its action than the sodium salt, and may be used in portal congestion, in chronic constipation, in dysentery, and in feverish attacks with loaded bowels.

Carbonate of magnesia neutralizes normal or excessive acidity in the stomach and bowels, and yields carbonic acid, which exerts its specific action on the stomach.

Calcium sulphate in combination in this water is antacid and a general gastric sedative with an astringency peculiar to itself; and is of value in arresting vomiting in acid dyspepsia and in pregnancy.

This salt can be traced along the whole length of the canal, and most of its bulk is finally expelled unabsorbed. Its virtues in the diarrheas is important. It is a constructive in wasting diseases where calcification is desired.

Potassium chloride exists in West Baden waters in greater amount than in any spring as yet analyzed. In the blood it acts as an alkaliser of the plasma and is especially indicated in the treatment of acute and chronic gout and for prolonged use in acute rheumatism. In anemia it is hematinic, restoring the red corpuscles.

Potassium is at the head of saline diuretics, and in renal dropsy it increases the functional activity of the epithelium, and increases the secretion both of water and urea, while the vessels remain undisturbed.

It is a suitable diuretic in feverish conditions. Owing to its being an alkaliser of the urine, it is extensively used in uric acid gravel of both kidney and bladder.

Hydrogen sulphide as existing in sulphur waters has a powerful effect as a purgative by increasing peristalsis and stimulating glandular structures, and is especially indicated in congestion of the rectum and liver, hemorrhoids and other diseases of the great bowel, and the waters and baths combined are powerful evacuants

and alteratives in plethora, hapatic engorgements, gravel, and disorders originating in them.

It is the most powerful of all the intestinal antiseptics. Waters containing hydrogen sulphide are of great value in phlegmanous inflammations and boils.

When we consider the natural combination of all these constituents existing in solution in a spring having a uniform flow of over fifty gallons a minute and a never-changing temperature of 57 degrees F., the intelligent physician can draw definite conclusions of the efficacy of West Baden waters as an adjunct to other therapeutic measures in the treatment of diseased conditions.

A prominent practitioner of Hot Springs once remarked to me, "Why claim the waters of West Baden or the baths of Hot Springs will cure everything? Every one knows Hot Springs is for syphilis and West Baden for 'booze.'" This is undoubtedly true of West Baden, and these waters act as a specific in the various forms of alcoholism, from an ordinary case of acute horrors to true delirium tremens. Personal observation has led me to believe that more cases of alcoholism are permanently cured here than by means of any other known treatment. After a thorough course of the waters, the patient not only has completely rid himself of the effects of alcohol, but has received the tonic and alterative benefits to the general economy. Besides a good red, alkaline blood, there is improved digestion and clear thought.

Of other troubles successfully treated here, constipation and gastroduodenitis in its various forms, come next in order. About 70 per cent. of all diseases entered in my case book are of the above diagnosis. The waters act as well in diarrheas and dysentery as in constipation. Hematogenous and hepatogenous jaundice, where malignant trouble is not the cause, are most successfully handled.

But, by far the most startling effects of these waters are observed in genitourinary troubles. I hesitate to state that I have seen many advanced cases of parenchymatous nephritis positively cured. Chronic cystitis, even of gonorrheal origin, yields readliy. The waters are even of great value in treating urethritis, specific

or simple, and an enlarged prostate with accompanying contraction of the bladder is often relieved.

In tertiary syphilis, the iodides may be given in enormous quantities in connection with the waters and baths, but mercury is contraindicated.

These waters are prescribed with benefit in even some organic diseases, but are positively, in many conditions, dangerous. Patients suffering with enlargement of the stomach should not drink the waters; pregnant women can not tolerate them, and in certain stages of alcoholism the admixture with the waters is often fatal. Epileptics should never take the waters. In many forms of organic heart trouble, however, the waters may be taken with happy results. This is due to portal depletion and otherwise relieving arterial tension.

In concluding I wish to deplore the fact that the large hotel companies of this valley are encouraging the pleasure resort feature to the serious detriment of these springs as a health resort. There is not a sanitarium in the valley. There is not a hotel table that caters to the proper diet. There is no encouragement to a successful practitioner to attempt hotel practice here, or start a sanitarium. In fact there were more guests seeking health here eight and ten years ago, when the hotel season was only of four months' duration, than visit the springs at the present writing.

DISCUSSION.

Dr. Geo. D. Kahlo, of Indianapolis: The doctor in his paper has referred to the various analyses of the different springs in the French Lick and West Baden Valley. The only confusion that arises is because the different analyses are stated in different quantities. One will show parts of the various ingredients per thousand, and another the parts per United States gallon, and it is calculated to confuse the practitioner as to what the therapeutic properties of the water may be. Of course we are familiar with the therapeutic effects of the various constituents which the doctor has enumerated—sulphate of soda and magnesia and other ingredients that exist in smaller quantities. I am sorry he did not

enter more into detail in referring to the therapeutic indications of these waters. I can heartily endorse what he has said that it is a misfortune to the profession that these resorts are advertised largely as pleasure resorts rather than as health resorts. I believe we have waters in this valley of very great value from a therapeutic standpoint, waters that excel among the mineral waters of this country. The same springs in almost any country in Europe would be subject to very close governmental supervision, and the results obtained would be different from those obtained here simply because there is a lack of proper scientific supervision in drinking the water. People come here and have a preconceived idea as to how much water they should drink, without any idea as to what constitutes the indication for its employment. A guest will ask another or, perhaps a bellboy, how to drink the water, and go ahead on that advice, whereas, perhaps his condition is totally different from that of the one from whom he sought the information. I have had some experience with these waters during a period of two months, during which time I treated over two hundred patients at French Lick. They were all carefully examined physically, and in I dare say one hundred of them I examined the stomach contents quantitatively, the urinary excretion, and the fecal discharges in a considerable number of the cases. I also made experiments in cases where the digestion was apparently normal and others feeling and complaining of no symptoms. As a result of these investigations I may state as regards the clinical indications that in diseases of digestion, which constitute perhaps 80 per cent. of the cases coming here, the treatment is especially applicable. Among the various digestive disturbances I found the best results in cases of chronic gastritis associated with excessive secretion of mucus, especially such as had associated also chronic constipation. The water acts as an absolute specific in such cases. I tested frequently the stomach secretions in such cases before and after drinking the water, the amount of urea excreted, and found that it was the same in all these conditions as the laboratory findings. In diseases of the liver these waters if used judiciously act favorably. You will see

about here and at French Lick probably a number of cases of jaundice. I have treated a number of such cases, and except that there was some mechanical obstruction to the outward flow of bile they were invariably improved. In rheumatic conditions of a chronic character the water is excellent. I have had less favorable results in acute inflammatory rheumatism. The results obtained in diabetes were quite remarkable to me. I treated perhaps half a dozen diabetics, some of whom showed as high as eight or nine per cent. of sugar, and the sugar disappeared from the urine within a week's time. Now how long this condition continued I am not prepared to say. In nephritis, especially those cases of gouty kidney, cases associated with general arteriosclerosis, and particularly such as showed evidence of cardiac embarrassment, they were not only not benefited, but I believe the water is absolutely contraindicated in such cases. And so in other cases of involvement of the kidney in which we have not the coexistent arterial degeneration the effect of the water is very good. Cystitis apparently was universally improved. The same was observed with regard to urethritis.

Now just a word in a general way as to the employment of the waters. We find people here drinking sixteen or eighteen glasses of water a day simply because somebody else has drunk thirteen or fourteen. People come here to drink the water and believe the benefit will be proportional to the amount consumed. As a matter of fact in the majority of cases it bears an inverse ratio. I believe if the maximum quantity of water consumed was seven or eight glasses the results would be very different from those ordinarily obtained. Another thing that militates against good results is the fact that so little attention is paid to diet. One of the effects of the water is that it greatly stimulates the appetite, and people eat too much. If they would eat moderately of plain food, exercise freely and in addition to that would stimulate the excretory functions of the cutaneous system they would derive much more benefit than they ordinarily derive.

I want to reiterate what I said in the beginning: It is to be deplored that the profession of the State has not given more

attention to the investigation of these waters. We send patients outside of the State many of whom would derive as much or more benefit if confined to our own territory if these waters were better understood. In the matter of treating syphilis Hot Springs, Arkansas, has long enjoyed a great reputation. For my own part I never could understand why a water of this character, which acts as a stimulant to all the secretions and excretions, would not be quite as good.

Dr. Lindenberg, of French Lick: One point has not been mentioned about the effect of the water. Its excretory effect we all know. This water being very similar to normal salt solution in many respects is very rapidly absorbed by the circulation, and there are a few conditions in which it does more harm than good. In any liver condition with a tendency to dropsical effusion these waters aggravate it very much. It has been my custom to place them upon a very small quantity of water with the addition of "Pluto, concentrated," so that they are depleted rapidly. As Dr. Kahlo has said, the profession knows very little about this water, and in these various affections of the liver, as well as of the kidneys, they are sent down here to drink as much water as they can ingest, and it is not long before their dropsical condition increases and they are so bad—coming here anywhere from ten days to two weeks—that I have to send them away. And in this connection I wish to say that the ten-day treatment at French Lick and West Baden ought to be eliminated. They come here for a variety of conditions. They are told that on the eleventh day the effect of the water is entirely different from what it has been on the first ten. I am trying to get people to remain here from three to six weeks and giving them a smaller quantity of water.

About the diet at the various hotels, Dr. Howard is right; and I am glad to say I have taken this matter up with the French Lick Springs Hotel Company and in a short time a diet list will be prepared for those cases that demand it.

Dr. F. B. Wynn, of Indianapolis: I do not arise to discuss the paper, but to make an inquiry. I went to No. 5 Spring this

morning and there, certainly within two hundred feet, were two privy vaults. I should like to know whether they have sewer connections or if simply surface privy vaults? I did not investigate carefully, but if they are ordinary country privy vaults they are a menace to this institution. You can readily conceive how they might connect with the spring, and it is a great oversight on the part of the management to allow such vaults as that.

Dr. Theo. Potter, of Indianapolis: This matter of mineral springs and the people that come here is an exceedingly interesting one historically. Every nation goes through the same course of development in regard to matters of this sort. The earlier Roman did not have his baths and so on; it was after he became rich and lazy and overfed that he needed them. The same thing occurs with every nation. It is occurring with us. We are growing wealthy, self-indulgent and dyspeptic, and so as a result of the life we are living the necessity for this sort of thing arises. It is growing and will grow.

Theoretically the efficacy of these mineral waters is often exaggerated. Practically the value of a resort is not exaggerated. We may speculate and dispute over the therapeutic value of the mineral constituents of this or that water, but the fact remains that with the growth of certain things in civilization there is a demand for the things supplied by these resorts, and while there may be some exaggeration as to the mineral constituents of the waters there is no exaggeration as to the value of such a resort and the application of such medicinal means. If this is true, that the passing years increase the demand for such things, then it behooves us to look carefully into this matter. My own experience is like that of others, that two or three things are important in this connection. In the first place the profession ought to have as far as possible assurance that at such places there are physicians upon whom we can rely. We have seen in one of the papers this morning that one of the correctional institutions of the State is under good medical care. Now the same thing we ought to be sure is true in these mineral spring resorts. I do not say it is not true. I say nothing about that. But in general that is true. In

the second place we ought to make it a regular custom to send our patients to the regular physicians at these places. In the third place we ought to do all we can at home to disabuse the minds of our patients of the superstitions that gather about this sort of resorts. We hear of that ridiculous ten-day superstition. They say the proper thing is to go for ten days and after you go home you will feel the good results. This is absurd, and we should disabuse the minds of our patients of this and send them to the physician and have them rely upon what he says and not upon bellboys and friends.

Dr. Howard, closing: In answer to the question as to the privy vaults at No. 5 Spring I will say that is absolutely true, and there is danger of surface contamination. That is not only true of one spring, but of all of them except those cased down beyond the surface soil. I do not remember a time in three years that I have prescribed No. 5 Spring. In No. 7 the casing was put down twenty-one feet in the dry earth. It is free from surface contamination, as has been shown by examination. But I do not see how colon bacilli could exist in the sulphur waters. They are very strong antiseptics, and they could not propagate anyway. With reference to the other springs in the neighborhood, there is room for improvement. There is no doubt we had a typhoid epidemic here a few years ago, and it was not due to too much sulphur water and not enough fresh water. The Pluto Spring has been lowered and the fresh water spring has not been lowered and so the fresh water must gravitate there. And that is one reason for the Pluto water varying in its constituents. That can be remedied by a thorough casing. The drainage of the whole valley could be greatly improved. But in spite of all this the water in two or three weeks does effect wonderful results.

THE ERYTHEMA GROUP OF SKIN DISEASES AND THEIR VISCERAL LESIONS.

BY A. W. BRAYTON, M. D., INDIANAPOLIS.

The tendency in dermatology has been toward elaborate clinical subdivisions, with multiplicity of titles and excessive refinement in nomenclature. There are some 160 titles given to the varying manifestations of skin lesions, and yet we have no satisfactory classification. This condition is not different from that of other departments of medicine and surgery, for finality of classification can only follow finality of knowledge. It is inevitable that in the development of any branch of medicine attention should be given to objective manifestations to the neglect of the underlying causes not determinable in the present state of pathology. The dermatologists have been commendably industrious, and have massed a vast array of the clinical facts upon which etiology must rest, and we may hope that the future will bring a clearer recognition of fundamental relationships.

But at the present we must recognize that classification is imperfect; that it is in any case a good servant but a bad master. We should not be beguiled into thinking that any system of pigeonholing skin diseases is an Ariadne's thread, which will guide us through all the mazes of cutaneous pathology, diagnosis and treatment.

And to the trivialists who treat dermatology as a joke and a byword and say that skin diseases may only be diagnosed and classified, but not cured, we may quote the saying of the eminent anatomist, Willan, the father of English dermatology, that the successful dermatologist must not only be able to treat the skin, but everything inside of it. The subject must be taken up seriously and persistently and patiently, as with other branches of medicine, by those who have attained to that ripeness of experience which

can only come by a long and faithful study of pathology and general medicine. I have frequently remarked to my students that the better the doctor the better the specialist, reminding them of the wise statement of Jonathan Hutchinson, perhaps the widest all-round specialist of his generation, that the aim of all true-hearted specialists is to break down the walls of specialism. Mr. Hutchinson even wondered that some of the raw, crude, unbaked, self-denominated specialists of his day did not weary of the petty view of medicine they had adopted, and find themselves sympathizing with the English corporal who shot himself, leaving no excuse but a brief note on the barrack room table which read, "Tired of buttoning and unbuttoning."

I am sure Dr. Osler felt some impatience with the dermatologists when he criticised their strictures upon his several papers upon "The Erythema Group of Skin Diseases and Their Visceral Lesions"—the same title I have taken for my present consideration, assuring you that were it not for Dr. Osler's study of this group I never could have prepared the paper at all.

Dr. Osler had written several papers upon this remarkable group, representing studies of a score of years. The summary of them you may find in the American Journal of the Medical Sciences for January of 1904. In this summary article he writes: "I am told that I have jumbled together a motley group of cases, some of purpura, some of angioneurotic edema, others of peliosis rheumatica, others again of exudative erythema." "I did so on purpose," he continues, "for I was seeking similarities, not differences, and I refrained from the use of special terms, often, indeed, not knowing what to call a case watched for a long period." "What," he says, "shall I call case two, which I watched for six years? Purpura, erythema, neurotic edema or urticaria? The lesions varied from time to time, but there could be no question that all of them with their extraordinary visceral symptoms were manifestations of one and the same cause."

Another of these cases began with simple erythema, then crops of urticaria, and later appeared an exudative erythema, with purpura and vesiculation. In two of the cases expert dermatologists, in-

cluding Dr. Fox of New York and Dr. Dühring of Philadelphia, were in doubt as to the nature of the lesions and could only class them as peculiar types of erythema. Had these cases been classified according to the current nomenclature of dermatology they would have furnished the basis for several different "diseases," in the restricted sense the term disease is so often used. It is this refinement of nomenclature, this naming of a lesion as a disease, that led some wag to say that, like Holofernes, the dermatologists had attended a feast of the languages and from the stolen scraps formed the dermatological nomenclature.

Of the twenty-nine cases collected by Osler, in five purpura was the only lesion, in four purpura with arthritis, in four purpura with fever. In seven there was the common combination of purpura with raised wheals—purpura urticans—which is the usual lesion of peliosis rheumatica. In five cases there was angioneurotic edema either alone or with other erythematous lesions. Erythematous lesions were present in fourteen cases; in only two alone. In the others with swelling in the form of erythematous blotches, usually with purpura or urticaria. Summing up, we find that the twenty-nine cases showed a mixture of skin diseases, each of which is given a definite name representing a supposed distinct disease with a definite and separate etiology.

We may well linger on this remarkable group because of its great interest to both physician and surgeon. The study of the cases in detail would be beneficial to every member of our profession, whether in general or restricted practice. I await with some impatience the new edition of Dr. Osler's incomparable *Practice,* that I may see what rank he gives them in the rearrangement which the great advances in pathology and etiology require in every new edition of works on the practice of medicine.

In a later paper (May, 1904), Dr. Osler discusses the surgical importance of the visceral crises in the erythema group of skin diseases. These visceral crises may be mistaken for appendicitis, or intussusception, or obstruction of the bowel, and the patient handed over to the surgeon for operation. In one of Osler's cases the attack of pain was unilateral and diagnosed as renal colic.

One case was admitted to the surgical wards with abdominal symptoms, which were supposed to be due to appendicitis. The patient was a lad of 15, previously healthy. Fortunately, the skin rash was noticed; the pain subsided, and he was transferred to the medical wards. There was severe colic; a rash of exudative erythema on the legs, with here and there purpura, acute nephritis with blood casts; a small amount of blood in the stools. In this case the association of the colic with the passage of the blood by the rectum might have led to the diagnosis of intussusception. This was more than a skin disease; the kidneys and intestinal walls were also involved. In two months the kidneys were nearly normal; in six months the boy was well.

Another case seen by Dr. McCrae, in consultation, was a girl of 17. She was rolling in abdominal pain, paroxysmal in nature. There was no tenderness of the abdomen and no resistance; no skin eruption and no fever. Morphia relieved her temporarily. But the knee joints were swollen and tender. The association of the pain and arthritis made Dr. McCrae suspicious of the form of abdominal colic associated with skin lesions and nephritis. Now this girl had suffered severe abdominal pains every week or two for the preceding six months, and four months before admission to Johns Hopkins had been operated upon at the Baltimore City Hospital, and nothing was found—gall bladder clear; no gastric ulcer; no appendicitis; and no relief by the operation. She was kept in Johns Hopkins two weeks; was better and was sent home. Save nosebleed, and a trace of albumin and hyaline casts, all examinations were negative. But in six weeks she was back to the hospital with severe colic, much nausea, frequent nosebleed and once blood from the gums; urine smoky, slight albumin, some blood casts and hyaline casts. No skin eruptions were present. She was soon better, and in ten days was sent home. An appearance of skin lesions would have cleared the obscurity of the attacks of colic.

The lesson for the surgeons in the cases which were operated upon is that in children with colic we should get a full history of skin lesions, as well as of arthritis and intestinal crises. Search should be made for purpura, angioneurotic edema, urticaria and

simple erythema. Recurring colic may be the sole feature for a long time, and then the skin lesions may appear and clear up the case. In such a case arthritis may appear later; or purpura, or edema, melæna, vomiting of blood, albuminuria and hæmaturia, may come in turn or together. But in 25 of Dr. Osler's 29 cases the colic was the most constant of the visceral manifestations. The colic was never dangerous, although the most constant symptom of Henoch's purpura. The only opportunity to examine the intestinal walls is in the cases where laparotomy has been performed, and these, so far as I can find, are the five cases here presented: one of Dr. Osler's; two of Dr. Smith's; and two reported in the *British Journal of Children's Diseases,* quoted by Osler. The operation by Dr. Sutherland on a boy of five, and by Dr. Burrows on a boy of eleven, showed what we would expect from our knowledge of what takes place in the skin. There were dark patches due to extravasated serum and blood in the intestinal walls. Both cases were operated for a supposed intussusception. One of these cases had an arthritis and a skin rash before the operation, and the other developed a skin eruption with albuminuria five days after the operation, proving the case to be one of Henoch's purpura.

In a second case reported by Dr. Sutherland, a girl, aged seven years, was admitted to hospital with Henoch's purpura. She had a prolonged illness with the usual attacks of abdominal pain, vomiting of blood, melæna, albuminuria, and hæmaturia. She gradually recovered, and three months later was readmitted with a recurrence of all the symptoms. The pain was more severe, referred to the umbilicus, spasmodic and colicky in character. There were hemorrhages similar to the previous attack. She died in a general convulsive seizure. The temperature was 104° F. There was acute general peritonitis and intussusception of the cæcum and part of the ileum into the colon. The involved portions of the intestine were black and hemorrhagic and gangrenous. As Dr. Sutherland rightly surmises, the fatal attack was induced by hemorrhage into the wall of the colon, leading to paralysis of the affected part and to increased muscular contraction, with colic, in the adjoining part of the bowel. As a result of these strong

muscular contractions the sound part of the intestine became invaginated into the paralyzed and hemorrhagic portion.

The subjects of the erythema with visceral manifestations are usually young. Of Dr. Osler's cases eight were less than ten years of age; thirteen were between ten and twenty. Eleven were females; eighteen were males. The condition is serious—7 of the 29 died.

CLASSIFICATION ACCORDING TO THE ORGANS ATTACKED.

In two of the cases there were brain symptoms; one with active delirium at the time of the recurring attacks; in another case five or six attacks of aphasia and hemiplegia, the brain and skin manifestations lasting for 13 years. These transient brain attacks are probably due to vascular changes in the brain, which are the counterpart of those occurring in the skin.

I treated, this last autumn, a woman of 40 with peliosis rheumatica, who had suffered from an alleged typhoid, a wrong diagnosis. She had transient aphasia and delirium, which were regarded as hysteria by her attending physician.

I may emphasize hysterical erythema as a concomitant of the group without fear of "drawing out the thread of our verbosity finer than the staple of our argument."

The visceral lesions attending the erythemas are diverse in form and situation, and vary a good deal with the character of the eruption. We know skin lesions are associated secondarily with diseases of the internal organs. Severe purpura goes with Bright's disease; urticaria and purpura with cirrhosis of the liver; urticaria is often found with asthma (though often wrongly called eczema); and all forms of erythema with chronic valvular heart lesions of children.

Urticaria is the best known type of the serous exudations. Most cases are due to an autotoxis of gastro-intestinal origin. Of these toxins Dr. Osler says:

"For example, the urticaria of cholelithiasis, of an ague paroxysm, that caused by eating shell-fish or strawberries, the urticaria of hydatids, and an asthma attack has the same clinical and anatomical features, though caused by a variety of poisons—bacterial,

protozoal, vegetable, and metabolic. It is not unlikely that the poison in itself, of whatever kind, is of less intrinsic importance than certain transient aspects of cell metabolism. In the first place, there is no constancy of action of the same poison in different persons, or even in the same person at different times. This is notoriously the case with the animal and vegetable substances causing urticaria. In the second place, the chronic forms of urticaria probably illustrate a morbid and persistent sensitiveness of the cutaneous vessels to poisons of either intestinal or tissue origin. And, thirdly, the importance of the local status is shown in that remarkable form of urticaria which comes on after exposure to cold. So long as the face is at a temperature above 60° F. the patient is all right; exposure at 40° F. is followed at once by an outbreak of urticaria. And, lastly, a peculiarity that may be transmitted through several generations, as in angioneurotic œdema, which is only urticaria "writ large," must either be a morbid susceptibility of tissue or an inherited peculiarity of metabolism, or both combined.

"The relation of the erythemas to infective processes is interesting. Certain types of exudative erythema behave like an acute febrile disease, and Dühring, of Constantinople, has described an epidemic form. In many of the fevers—typhoid, pneumonia, rheumatic fever, etc.—there may be symptomatic erythemas. The severer forms of purpura urticans with arthritis and colic (Henoch's purpura and the peliosis rheumatica) may run an acute febrile course with heart complications. Many of the graver cases of purpura have followed an acute infection, puerperal fever, gonorrhœa, otitis media, etc."

The rheumatic poison is responsible for many cases. But in the large group of cases, persisting for years, an infective process is out of the question.

The complications of the erythema group are of two classes: 1, the angioneurotic, and, 2, the inflammatory. To the former belong the swellings of the fauces, the œdema of the glottis, the changes in the bronchial mucosa causing asthma, and the colic which is due to the localized œdema of the gastro-intestinal walls.

To the inflammatory group belong the more serious complications, such as endocarditis, pericarditis, plurisy, pneumonia and nephritis.

Respiratory complications, such as swelling of the fauces and larynx, causing croup, and even death from œdema of the glottis may occur in connection with the erythema. An exudative erythema has been followed by both croupous and labor pneumonia. Endocarditis and pericarditis have occurred in connection with intense arthritic purpura (peliosis rheumatica).

Gastro-intestinal symptoms are the most common features of the group, and should be given especial emphasis: Recurrent colic; vomiting; diarrhœa; passing of blood. Of 30 cases, 25 had colic, and of these eight had outbreaks of urticaria. Colic is a special symptom in angioneurotic œdema. In one of Osler's groups colic and œdema ran together through five generations.

I once treated a man of 30 years through two different attacks of giant œdema, in which the face was featureless; there was also colic requiring morphia for its relief. The attacks were sudden; in each there had been a large dinner with meat pie and much ice cream. His appearance was frightful, and at the same time he was doubled with colic. Recovery ensued within two days.

Renal complications are the most frequent and fatal complications of the erythema group. Of the seven deaths out of 29 cases, five died from uræmia. The poisons, whatever they are, which cause the erythema also cause the nephritis. The nephritis, as a rule, comes on at the hight of the skin lesions, or it may follow a week after. Five of the 14 cases of nephritis died of uræmia. In 4 purpura alone was present; others had mixed types, œdema, and urticaria. But purpurpa was the most constant lesion, occurring in 13 of the 14 cases with nephritis.

Arthritis was present in 17 cases. The arthritis is usually regarded as a "hall mark" by which we can recognize the rheumatic poison. Many of the cases of arthritic purpura have nothing to do with the poison of rheumatism. But simple erythema, on the other hand, with or without purpura and arthritis, may be in children, as are endocarditis, tonsilitis and subcutaneous fibroid nodules,

manifestations of the rheumatic poison—links in the rheumatic chain—worthy of consideration. We may relate these sero-sanguineous lesions of the skin with those of the nervous system, grouped under the name of hysteria. Hysteria is above all else histrionic; it is a mimicry of organic disease.

It is as true to-day as it was over 200 years ago, when Sydenham wrote: "Whatever part of the body hysteria attacks, it will create the proper symptoms of that part. Few of the maladies of miserable mortality are not imitated by it." Such is at least the quaint translation.*

We do not exclude the toxic or blood factor in the causation of these serous and sero-sanguineous effusions, such as urticaria, erythema, erythromelagia, ischæmic spasm and even purpura and hemorrhage. But they may be caused by the same factors which determine undoubted hysterical manifestations, the effusions being due in part, or entirely, to the neuro-vascular irritability and irregularity which form the essential element of hysterical conditions. The hysterical patient has lost his vascular equilibrium, and is the victim of a vaso-motor ataxia as definite, but not as persistent, as the ataxias of the central nervous system.

A toxic or nutritional element can often be revealed in these dermal and visceral effusions. It is a question of dual causation, and both the toxic and the neuro-vascular factors are met with in different proportions in different cases, just as they are met with in epilepsy and other neuroses in varying quantities. Congestion, pallor and ischæmic spasm are usually of purely angioneurotic and emotional origin, while in the serous and sero-sanguineous effusions of the erythema group of skin diseases, with their visceral complications, the two factors, toxic and nutritional on the one hand and neuro-vascular on the other hand, are nearly always combined. Congestion and pallor, blushing and fainting, at the one extreme, may be purely emotional. Urticaria, purpura and hemorrhage, at the other extreme, may be purely toxic. In the serous and sero-sanguineous effusions the toxic and nervous factors are nearly always combined.

*Sydenham was a Latin scholar, and of his medical writings not as much as the bulk of this paper were written in the mother tongue.

Now what, we may ask, is the use of writing prescriptions and giving "methods of treatment" in cases of this sort—I mean in a paper of this kind? The diagnosis and the treatment are dependent on an immense knowledge of theoretical and practical medicine; upon the fundamental concepts of embryology, physiology and pathology. The chronic cases of colic described above may resist all measures, and yet courses of calomel, dieting, hygiene, etc., may prove of use. The chief danger in the erythema group is from the kidneys. This form of recurrent nephritis may be helped by rest in bed and a properly selected diet. The skin lesions are treated symptomatically. For those due to vaso-motor ataxia, picrotoxin has been advised by Solis Cohen. But there is no single drug, such as sulphur for itch, or mercury for syphilis, or arsenic for psoriasis, to be prescribed in these cases.

How shall we treat hysteria or the neuroses? It is not the function of this paper to be "practical" in the sense of specific treatment for specific forms, or of pruritus, or of urticaria. And so I drop that part of the subject, leaving it to the sense and judgment of the practitioner.

The skin is, in final analysis, an immense gland spread over the body, and this view is quite conformable to anatomical and physiological principles. This gland—the skin—contains *nerves of secretion,* which by their morbid changes give rise to the purely sensory dermatoneuroses, such as anæsthesia, dermatalgia, pruritus, and various perversions of sensibility.

This gland—the skin—contains also involuntary *muscular fibers* which affect mainly the sebaceous follicles.

This gland—the skin—contains *bloodvessels* whose calibration is regulated by the vaso-motor constrictors and dilators. The vaso-motor center in the floor of the fourth ventricle is at the head of the system, with cell-stations scattered along the route. By their modifications arise the purely vaso-motor dermatoneuroses. They comprise a large group ranging from anæmia to hemorrhage.

This skin gland also contains secretory cellular elements, and these elements are affected by the changes in the trophic influence of the nervous system giving rise to the *trophic dermatoneuroses.*

Thus we see that the skin does not differ greatly from any other great glandular and secreting system, being comparable in many ways with the gastro-intestinal mucosa. And the changes in the skin surface consecutive to changes in the nervous system are comparable to the changes in a gland following changes in the nervous system, or to the changes in the alimentary tract. Trembly, of Geneva, 200 years ago, turned fresh water polyps wrong side out with a hooked bristle so that the mucosa became the skin, and *vice versa*. And the polyps suffered no inconvenience from this transposition, in their digestive, reproductive or nervous and muscular sensations and movements.

EMBRYONIC RELATIONS.

Finally, we should observe the embryonic relations of the skin and the nervous system. When growth begins in the embryo we have formed three distinct layers—the epiblast, the hypoblast and the mesoblast. From the epiblast both the skin and the central nervous system are developed, and these are the only structures of the body developed from the epiblast. The physiological resemblance is in the fact that the skin with its tactile corpuscles, the eyes and other external sense organs, represents the external projection of the sensorium, just as the central nervous system represents the internal projection of the sensorium. Between these two great sense and control organs—the skin, and the spinal cord and brain—lie the complex organs of motor, of reproductive and of nutritive life.

No wonder that so complex an organism as the skin should reflect a thousand changes of the controlling mind and nervous system. And notoriously should it sympathize with the functions and pathology of the great internal glands of the body—the gastro-respiratory tracts; the liver, the kidneys and reproductive glands.

We only have to consider syphilis seriously to recognize a striking illustration of the pathological resemblance of the skin and the nervous system, although the similarity is secured mainly through the great permeations in both the skin and the central nervous system of the nutrient arteries. For syphilis, as far as it may be re-

garded as a disease of any single tissue, is a disease of the arteries. But syphilis is especially apt to affect both the skin and the central nervous system in preference to the other parts of the body. The best teachings of syphilis should be in skin and in nerve clinics, as Gower has again and again pointed out in his illuminating and informing essays.

And it might be added that in skin and nerve clinics are also the best places to study hysteria, for among the veritable stigmata of hysteria are the slighter and the transient pallors and congestions; the more severe neuro-vascular changes resulting in sero-sanguineous cutaneous effusions, so well noted by S. Weir Mitchell and others—the urticaria, erythemata, and even the hemorrhages studied by Charcot and the School of Nancy in hypnotized and hysterical subjects.

I think I have gone far enough, perhaps too far, and have too much discarded the specific for the general. But I hope I may have linked some symptoms regarded as diseases into a useful relation. We may not err in a paper of this kind to suggest anew the natural foundation of our common science of disease. There are those here who were in their student days in Edinburgh or in Berlin some fifty years ago and were steeped in the vagueness of the one-sided, humoral or neurotic conceptions of disease; men who read at first hand, or heard directly from the lips of the great Virchow his bold and practical teaching of the cell as the unit of the organism, and that all local disturbance should be traced back to the individual cell! They saw the cellular pathology sweep the field and clear the air, and for a while the students believed there was a new heaven and a new earth.

In seeking the cause of any disease we must hold ourselves in perfect balance, and not be swept away by any or every wind of doctrine. Within the last twenty years the tendency has been to refer all that is typical and cyclical in disease to the presence and action of lower organisms, thus inaugurating a new ontological era in pathology. Great as is the bacterial pathology, it is only an element in the causation of disease; we do well still to hold ourselves as Reindflesch stated 15 years ago, "not in an antagonistic, but in a

conservative attitude, while endeavoring to separate from disease as a whole that typical element which pertains not alone to the cause of disease, but to the diseased organism itself. Surely a great opportunity for research has been opened to us by the discoveries of the present generation upon the nervous system, and more and more it is our duty to search for the nervous relationships which underlie or modify every species of disease.

And a large field of study opens up in consideration of heredity and environment. And so I have not attempted the practical, in the sense of the case hunter and symptom treater—the petty specialist who can see a hair, but not a horse. What we need is wisdom rather than overmuch knowledge. Knowledge comes, but wisdom lingers, and in the final analysis every one must get wisdom for himself. Therefore I have considered some of the general relationships of a group rather than to have limited myself to the classical presentation of one of the single members.

REPORT OF COMMITTEE ON NECROLOGY.

BY G. W. H. KEMPER, M. D., CHAIRMAN.

The following counties reported that no deaths had occurred:

Allen, Bartholomew, Cass, Crawford, Daviess, Delaware, Fayette, Floyd, Gibson, Hamilton, Hendricks, Huntington, Jackson, Jefferson, Jennings, Lagrange, Morgan, Orange, Pulaski, Tippecanoe, Vigo, Warrick. Total, 22.

The following counties reported deaths:

Boone County, Dr. Madison H. Rose.
Dearborn County, Dr. Richard C. Bond.
Dekalb County, Dr. Joseph H. Ford, Dr. David J. Swarts.
Elkhart County, Dr. Charles H. Niman.
Fountain County, Dr. Lewis P. Armstrong, Dr. James T. Henderson.
Henry County, Dr. Osa R. Summers.
Johnson County, Dr. Joseph M. Wishard.
Knox County, Dr. Lyman M. Beckes, Dr. Ellis M. Kessinger, Dr. Andrew J. McGaughy.
Laporte County, Dr. Horace Wardner.
Marion County, Dr. Daniel A. Thompson, Dr. James Walter Hervey.
Martin County, Dr. Stephen H. Brittain.
Owen County, Dr. Wilfred Hickam.
Posey County, Dr. George W. Welborn.
Rush County, Dr. Lot Green.
Switzerland County, Dr. Hannah C. Rous.
Vanderburgh County, Dr. John W. Compton.
Vermillion County, Dr. Alexander Kindermann.
Wabash County, Dr. Henry C. Mooney.
Washington County, Dr. Thomas H. B. Baker.
Wayne County, Dr. Eber K. Watts, Dr. David H. Yockey.

LEWIS P. ARMSTRONG, M. D.

MEMBER OF THE FOUNTAIN COUNTY MEDICAL SOCIETY.

BORN IN MONTGOMERY COUNTY, INDIANA, JUNE 28, 1836.

DIED AT NEWTOWN, INDIANA, MARCH 16, 1905.

AGED 68 YEARS.

Dr. Armstrong's parents located in Montgomery County, Indiana, in 1822. The subject of this sketch was born in that county, and afterwards removed to Logansport and attended the seminary in that city. In 1859 he began the study of medicine with Dr. Howell of Mt. Vernon, Ind., and later pursued the study of medicine with Dr. Landry of Galveston, Ind., after which he attended two courses of studies in the Cincinnati Eclectic Medical College. He began to practice medicine in Harveysburg, Fountain County, in 1863. He moved to Marysville, Ill., in 1865, where he practiced for four years, after which he returned to Harveysburg. He attended the Miami Medical College, Cincinnati, Ohio, in 1873 and '74, graduating the latter year, and returned to Harveysburg. Afterwards he located at Newtown, Ind., where he continued to practice until the time of his death.

He was a republican in politics, and a member of the Masonic fraternity. He was married in 1864 to Hannah Towell.

Dr. Armstrong was a member of the Fountain County Medical Association, and served as President, and filled other positions in the Association at various times. He was pleasant and dignified, and was held in high esteem by his medical associates, as well as the community in which he lived and served so well.

(Prepared by Dr. George Rowland, Covington, Indiana.)

THOMAS H. B. BAKER, M. D.

FORMERLY MEMBER OF THE WASHINGTON COUNTY MEDICAL SOCIETY.

BORN IN WASHINGTON COUNTY, INDIANA, APRIL 8, 1838

DIED AT PEKIN, INDIANA, JUNE 1, 1905.

AGED 67 YEARS.

He was the son of Dr. Valentine Baker, and Polly Hamilton Baker. Was educated in common schools, and State University. Graduated in medicine from Medical Department, University of Louisville. Married Adaline Naugle in 1859, and to them were born eight children—four daughters and three sons survive him. He was a priviate in Company E, Fifth Regiment Cavalry, Indiana during the Civil War. Was a Mason, and a member of the M. E. Church, and always stood for progress in everything in church, State and medicine, and as long as health permitted attended his society meetings.

(Prepared by Dr. R. E. Baker, Orleans, Indiana.)

LYMAN MARSHALL BECKES, M. D.

MEMBER OF THE KNOX COUNTY MEDICAL SOCIETY.

BORN IN KNOX COUNTY, INDIANA, JULY 26, 1862.

DIED AT VINCENNES, INDIANA, MAY 26, 1904.

AGED 42 YEARS.

Dr. Beckes attended the common schools, and graduated from the Vincennes High School in 1884. He began the study of medicine in 1884 and attended lectures in the College of Physicians and Surgeons of Chicago. The next year he resumed his college course at the Indiana Medical College of Indianapolis and graduated from that institution in 1887. He began the practice of medicine in Vincennes and enjoyed a lucrative practice until his death. He was a member of the Methodist Episcopal Church. He married Helen L. Staub of Terre Haute, Ind., in 1891. The widow and one son survive him.

He enjoyed the confidence of his fellowmen and held many positions of trust.

(Prepared by Dr. J. W. McDowell, Vincennes, Indiana.)

RICHARD CLAYTON BOND, M. D.

MEMBER OF THE DEARBORN COUNTY MEDICAL SOCIETY.

BORN IN WOOD COUNTY, WEST VIRGINIA, MARCH 22, 1822.

DIED AT CLARKSBURG, WEST VIRGINIA, JUNE 30, 1904.

AGED 82 YEARS.

Dr. Bond was the son of Rev. Lewis Bond of West Virginia. He read medicine with Dr. Hecklin of Virginia, and graduated from the Miami Medical College of Cincinnati, Ohio. In 1847 he was married to Miss Eliza Bevan and in 1848 he moved to Aurora where he continued to reside up to the time of his death. Dr. Bond served in the army as surgeon of the Fifteenth Indiana Volunteer Regiment from 1861 to '63; when failing health compelled him to retire, and he returned to Aurora to resume the practice of medicine, in which calling he kept faithfully at work, though somewhat enfeebled during his last years by advancing age. Dr. Bond was an active member of his County Medical Society, and did much to promote the interest and good feeling among the members. Being a ready and fluent talker he was always found taking an active part in the discussions of the society. He was ordained a minister of the Baptist Church, and at one time filled the pulpits at Wilmington, Rising Sun, and Aurora, Ind., for some years.

Having been engaged in the practice of medicine so many years and being of a frank, genial nature with a cordial welcome for everyone, he endeared himself to many both old and young, who will ever cherish the memories of Dr. Bond. He leaves a widow, two daughters, and one son, Dr. Marc L. Bond, who took the place of his father in the practice of medicine at Aurora. A short time previous to his death he decided to visit his relatives in West Virginia, his old home, and while there contracted pneumonia, which caused his death after a few day's illness.

(Prepared by Dr. Marc L. Bond, Aurora, Indiana.)

STEPHEN H. BRITTAIN, M. D.

MEMBER OF THE MARTIN COUNTY MEDICAL SOCIETY.

BORN IN WASHINGTON COUNTY, INDIANA, SEPTEMBER 25, 1836.

DIED AT LOOGOOTEE, INDIANA, OCTOBER 21, 1904.

AGED 68 YEARS.

Dr. Brittain received his preliminary education in the Salem, Ohio, schools; afterward he began the study of medicine with Dr. McPheters of Livonia, Ind. He attended the Cincinnati College of Medicine and Surgery where he graduted in 1859, and began the practice of medicine at Loogootee, Ind., where he continued to practice until the time of his death. He was married to Miss Elizabeth Wood, and to them two children were born. After her death he again married, in 1892, Miss Katie Sharum, and to them one son was born. A widow survives him. He was a medical officer in the Civil War. He was an active member of the G. A. R., was a prominent Mason, and an elder in the Presbyterian Church. His professional and social standing in the community where he resided was of the highest standard. His death was caused by myocarditis.

(Prepared by Dr. J. W. Strange, Secretary M. C. M. A.)

JOHN WILLIAM COMPTON, M. D.

MEMBER OF THE VANDERBURGH COUNTY MEDICAL SOCIETY.

BORN IN HARDINSBURG, KENTUCKY, JULY 22, 1825.

DIED AT TERRE HAUTE, INDIANA, MAY 28, 1905.

AGED 80 YEARS.

Dr. Compton attended the country schools, and after completing a common course of study showed so much energy and persistence in gaining an education that he soon was qualified as a teacher. He followed this profession for four years, when he gave up the work and entered upon the study of medicine He remained in a physician's office for two years and in 1849 entered the University of Louisville. He first started to practice at Knottsville, Ky., later moved to Owensboro.

Unswerving in his loyalty to the Union, he was commissioned Assistant Surgeon of the Seventeenth Kentucky Infantry. In March, 1863, while in camp at Nashville, Tenn., he resigned his commission to accept the position of Surgeon of the Board of Enrollment of the Second District of Kentucky, and in that capacity actively served until the close of the war. In October of 1865 he came to Evansville. The doctor soon took a leading position among his medical brethren and shortly after taking up his residence here he was elected President of the Evansville Medical Society. He was later appointed county physician, and during the life of the Evansville Medical College he occupied the chair of materia medica in that institution. In 1882 he was appointed a member of the United States Board of Examining Surgeons for Pensions at Evansville and served as its President until 1885. He was a charter member of the Farragut Post G. A. R.

Dr. Compton although taxed to keep up with his growing practice, found time to write many medical papers which have been a valuable addition to science. Politically he was a Republican, active in local politics, but in no sense a politician. He was a member of the First Cumberland Presbyterian Church and took a lively interest in all benevolent enterprises. In 1853 he was married to Miss Sallie Morton, daughter of the late David Morton of Owensboro, Ky., of this union four children are now living.

Dr. Compton died at the home of his son, Frederick S. Compton, at Terre Haute, Ind., where he went on a visit.

(Prepared by Dr. M. J. Compton, Evansville, Indiana.)

JOSEPH HALL FORD, M. D.

MEMBER OF THE DEKALB COUNTY MEDICAL SOCIETY.

BORN IN HARRISON COUNTY, OHIO, SEPTEMBER 8, 1823.

DIED AT AUBURN, INDIANA, MAY 8, 1905.

AGED 81 YEARS.

Dr. Ford when a boy removed with the family to Ashland, Ohio, and located near Savanna. Before he was of age he began the study of medicine. He removed to Auburn in 1884, in which year he began practicing his chosen profession. He was married on January 28, 1846, to Martha Cook of Savanna, Ohio; to them were born three children, one son and two daughters. His wife died July 28, 1889. The three children survive. From early boyhood he was a member of the Methodist Episcopal Church. Dr. Ford was a resident of Auburn sixty-one years, having built fifty-five years ago the home in which he died. Since the death of his wife he practically retired from the active duties of life, and spent his last years in the retirement of his home. His last sickness was of two years and four months' duration. The last days were peaceful, and to faithful watchers at his bedside he gave evidence of his trust in Christ as his Savior.

(Prepared from newspaper cutting furnished by Dr. F. C. Heath, Indianapolis, Indiana.)

LOT GREEN, M. D.

MEMBER OF THE RUSH COUNTY MEDICAL SOCIETY.

BORN IN ARLINGTON, INDIANA, JULY 29, 1847.

DIED AT RUSHVILLE, INDIANA, FEBRUARY 23, 1905.

AGED 57 YEARS.

DR. Green had only a limited preliminary education. He studied medicine with his father, J. W. Green, at Arlington, Ind., and graduated from the Medical College of Indiana. He at once entered upon an active practive, which increased with each year of his work. What he may have lacked in education was more than offset by an acuteness of perception, good sense and great industry, so that he was in every sense a good physician. Unselfish, constant work, driving brain and body to the utmost caused his early death. Twenty years of the hardest work was enough. He was of the type of the modern scientific school of medicine, with all that was good in the oldtime family doctor combined. In 1872 he was married to Cordelia Barnard; five sons were born to them, all of whom, with the widow, survive. Dr. Green was a member of the I. O. O. F. and K. of P. lodges. He was a staunch Republican. He began life a poor man, but through industry and perseverance rose to a very successful practice. He was honored and respected and held the confidence of the people.

(Prepared by Dr. J. C. Sexton, Rushville, Indiana.)

JAMES T. HENDERSON, M. D.

MEMBER OF THE FOUNTAIN COUNTY MEDICAL SOCIETY.

BORN IN PARKE COUNTY, INDIANA, AUGUST 10, 1846.

DIED AT COVINGTON, INDIANA, MARCH 2, 1905.

AGED 58 YEARS.

While Dr. Henderson was quite young his parents removed to Waynetown, Montgomery County, Indiana, where he was educated in the common schools. At the age of seventeen years, he began teaching school and continued as a teacher for five years. Afterwards he engaged in the general merchandise business a few years, and later began the study of medicine with Drs. Hart and Anderson at Waynetown. He graduated at the Medical College of Indiana in 1879, and began the practice of medicine at Waynetown, and later practiced at Perrysville. In 1888 he located at Covington, where he continued to practice until his death. He was married to Miss Amanda Thomas, April 13, 1870, who still survives him. One son, Thomas M., was born to them, and is now engaged in the practice of medicine at Pendleton, Oregon. Dr. Henderson was a kind man, a popular physician, and had a large circle of friends.

He was a member of the Baptist Church, the Masonic fraternity, also of the K. of P.

For many years he was surgeon for the Big Four Railroad, was also County Health Officer and Coroner of Fountain County. He was a member of the Fountain County Medical Association and of the Indiana State Medical Association. A post-mortem examination was held upon the remains of the deceased by the physicians of Covington, when it was found that the immediate cause of death was impacted gallstones in the gallbladder and its ducts.

(Prepared by Dr. George Rowland, Covington, Indiana.)

JAMES WALTER HERVEY, M. D.

MEMBER OF THE MARION COUNTY MEDICAL SOCIETY.

BORN IN FAIRFIELD, FRANKLIN COUNTY, INDIANA, APRIL 5, 1819.

DIED AT INDIANAPOLIS, JANUARY 5, 1905.

AGED 85 YEARS.

Dr. James Walter Hervey died January 5, 1905, at his home, 2332 Shelby street. His illness was of less than three days' duration and the cause of death was a severe cold, which proved serious, due to his extreme age.

He was born at Fairfield, Franklin County, this State, April 5, 1819, and when a boy went to Hamilton, Ohio, afterward to Lewisburg, Ohio, where he studied and practiced medicine. He later removed to Hancock County, this State, where in 1845 he was married, near Cumberland, to Miss Eliza J. Crump, who with two children, Dr. E. V. Hervey and Mrs. Murray F. Hill, all of this city, survive him.

He was one of the early graduates of Asbury, now DePauw University, and a fellow-student with the Rev. Dr. Thomas A. Goodwin. He resumed the practice of medicine after graduation at Asbury and settled in Hancock County. He had as a country doctor a large practice and rode on horseback through the woods of Marion, Hancock, Madison and Hamilton counties.

He was one of the few survivors of the Legislature of 1854, in which he sat as a Representative of Marion County. He was surgeon of the Fiftieth Indiana Infantry from the organization of that regiment until near the close of the Civil War, when he was transferred to the regular army. Medical charge was given him of the Veteran Reserve Corps, which was encamped on the ground north of Sixteenth Street, between Pennsylvania Street and Central Avenue, at Camp Morton, now Morton Place.

He was one of the oldest members of the State and Marion County Medical societies, having been preceded by a year or two only by Dr. W. H. Wishard and Dr. P. H. Jameson. He attended the International Medical Congress in Europe in 1892, as one of the representatives from Indiana.

During his long life of 85 years Dr. Hervey was instrumental in almost every movement that tended to the welfare of the people of Indiana at large and took the initiative in all of the medical reforms that took place. He was known as the father of the State Board of Health.

As a physician he was one of the old school and one of the most profound scholars in that school. From his very early boyhood he was

thrown upon his own resources by the death of his father, but by his diligence, persistence in study and never-ending efforts toward the public good he was enabled to be of the greatest service to his State.

In the early days, when the population of the three counties, Marion, Hancock and Hamilton, was threatened with malarial fever, Dr. Hervey collected money and purchased quinine at $5 an ounce and administered it to the sick.

He was an uncompromising temperance man, and more than fifty years ago wrote and published "The Scroll and Locket, or the Maniac of the Mound; a Temperance Tale." In this story, after many trials and tribulations, he established the hero and heroine "on the romantic Hudson overlooking one of the most romantic prospects on earth." This little story of one hundred pages concludes with the words:

"Friend of temperance go on—despair not—truth is eternal and immutable. Thy cause shall survive the transient breath of thy deluded opponents. Be not allured from thy steadfast mooring upon the rock of principle, by the flickering light of faction. Yes, the cause of temperance shall live while God has a sanctuary, humanity a votary, or virtue a home."

(Prepared by Mr. Charles Dennis, of Indianapolis, a life-long friend of Dr. Hervey.)

WILFRED HICKAM, M. D.

MEMBER OF THE OWEN COUNTY MEDICAL SOCIETY.

BORN IN OWEN COUNTY, INDIANA, DECEMBER 25, 1856.

DIED AT SPENCER INDIANA, NOVEMBER 22, 1904.

AGED 48 YEARS.

Dr. Hickam's early education was received in the common schools of his locality and in training schools for teachers. He taught school prior to and during his preparation for the practice of medicine. He began the regular study of medicine in the office of Dr. Schell of Spencer, and in 1883 he graduated from the Medical College of Indiana. He began the practice of medicine at Newark, in Greene County, where he remained but a short time. He then removed to Freedom, where he practiced for several years and was then elected Auditor of Owen County. At the expiration of his term of office he resumed practice at Spencer, and was considered one of the leaders in his profession. While at Freedom he was married to Miss Emma Hilburn. To them were born a daughter and a son. The children survive him. Mrs. Hickam died two years prior to his death. Dr. Hickam had been a member of the Owen County Medical Association for twenty years. The cause of his death was cancer of the stomach.

(Prepared by Dr. Allen Pierson, Spencer, Indiana.)

ELLIS M. KESSINGER, M. D.

MEMBER OF THE KNOX COUNTY MEDICAL SOCIETY.

BORN IN BRUCEVILLE, INDIANA, AUGUST 19, 1857.

DIED AT SANDBORN, INDIANA, MAY 21, 1905.

AGED 47 YEARS.

Dr. Kessinger's education was obtained in the common schools of Knox County, and the Central Normal College at Danville, Indiana. For several years he taught in the schools of Knox County. He graduated from the Hospital College of Medicine of Louisville, Ky., in 1891, and began the practice of medicine at Patoka. Later for a short time he was located at Bicknell, Ind., and from thence re-located at Patoka, where in 1894 he accepted a partnership with his brother, Dr. W. V. Kessinger, of Sandborn, Ind. Removing to that place the partnership continued to the time of his death. In 1893 he was married to Betty J. French of Patoka, Ind., who with a son and daughter survive him.

Dr. Kessinger was a member of the I. O. O. F., the Tribe of Ben-Hur, and the Modern Woodmen. In early life he joined the Christian Church, and his chief aim was to be about his Father's business. The church, the Sunday school, the young people's meetings ever found in him a staunch friend, ready at all times to give his time or means to further their interest. His death was due to an infection received while treating one of his patients, while performing an operation, for which he did not expect nor did he receive one cent of remuneration. After his infection he continued an invalid for four years. The entire community sustained a loss in his untimely death that time alone will adjust.

(Prepared by Dr. W. E. Kessinger, Sandborn, Indiana.)

ALEXANDER KINDERMANN, M. D.

MEMBER OF THE VERMILLION COUNTY MEDICAL SOCIETY.

BORN IN EUGENE, INDIANA, DECEMBER 5, 1858.

DIED AT EUGENE, INDIANA, APRIL 2, 1905.

AGED 46 YEARS.

Dr. Kindermann received his preliminary education in the common schools of his county, and afterwards began the study of medicine with Dr. Eichelberger at Terre Haute, Ind. He graduated at the Rush Medical College, Chicago, Ill., in February, 1883, and then began the practice of medicine at Eugene, Ind., where he continued until the time of his death. He was a member of the I. O. O. F., K. of P., M. W., and W. W. He never attached himself to any church, but his professional and social standing were of a high order.

He married Miss Lucy M. Gadd, September 15, 1889. His widow only survives. His death was due to neuritis caused from an injury.

(Prepared by Dr. O. M. Keyes, Dana, Indiana.)

ANDREW JACKSON McGAUGHY.

MEMBER OF THE KNOX COUNTY MEDICAL SOCIETY.

BORN IN DAVIESS COUNTY, INDIANA, NOVEMBER 15, 1855.

DIED AT LINTON, INDIANA, NOVEMBER 29, 1904.

AGED 49 YEARS.

Dr. McGaughy at the age of twelve was thrown upon his own resources. After receiving an ordinary education, he taught in the common schools; finally taking up the study of medicine. He attended the State University of Columbia, Mo. He graduated from the medical department of the University of Louisville, Ky., in March, 1884. He began the practice of medicine at Freelandsville, Ind., where he remained fifteen years. During the summer of 1898 he spent three months at the post-graduates school in New York City, where he also successfully passed the examination before the State Board of Registration.

On April 19, 1887, he married Maggie M. Parker, daughter of the Hon. James F. Parker of Freelandsville, Ind., who with one daughter, Rachel, still survive him. He was a man of unassuming and simple taste, going quietly about his work, conscientious in the highest degree, with strength of mind and purity of character. He was a very successful practitioner, notwithstanding the fact that he had not prescribed a drop of alcoholic stimulants for over eight years. The future seemed only too bright for a successful and useful life for him, and no one ever more completely devoted all thought and energy to a profession, being entirely absorbed in his life's work. The world is demanding such men. Men must know the work they select to do, and it requires almost incessant toil. None knew this better than did the doctor, and when opportunity presented he studiously perused some book, practiced tieing some surgeon's knot, or made some experiment—he was never idle. It was said of him, that he was one of the best read men in medicine in the State of Indiana. Although he did not pose as such, he was a teacher as well as a physician. While not a member of any church or lodge, he lived an exemplary life, and many a man and woman has been entreated by him to lead a better life.

He was a true servant of men, forgetting his own personal interests and welfare, in th greater interest of humanity. There is no walk or profession but has its opportunities for heroism, and no doubt there are many who owe their lives to his careful preparations and diligent application. In scientific, professional and social standing he was of the highest type and was a strict adherent to the ethics of the profession.

He died of typhoid fever.

(Prepared by Dr. J. D. McDowell, Vincennes, Indiana.)

HENRY CLAY MOONEY, M. D.

MEMBER OF THE WABASH COUNTY MEDICAL SOCIETY.

BORN IN MARSHALL COUNTY, INDIANA, JULY 27, 1850.

DIED AT LAKETON, INDIANA, MARCH 24, 1905.

AGED 55 YEARS.

Dr. Mooney was a graduate of the Northwestern University Medical School in 1876, and began the practice of medicine at Laketon, Indiana, the same year, and was in constant practice at that place until his death. Dr. Mooney was a member of the Masonic, Maccabees, and Modern Woodmen fraternities. He was a member of the Wabash County Medical Society, which he joined in 1876.

He was one of the best and most favorably known men of this county. His friends were numbered by his acquaintances and he was beloved by all who knew him. He was one of the most able and successful practitioners of Wabash County. He sacrificed his health and life to soothe the pains and heal the afflictions of his many patients. No night was too dark or stormy, and no road too long for him to go in the performance of his chosen work.

He was married to Miss Etta France, who died December 31, 1902. He is survived by two sons, Charles and Edwin C.

Death was due to an attack of apoplexy, which came on him just as he was starting to make a call about 6:00 p. m., resulting fatally about an hour later. Dr. Mooney was buried at Laketown, Indiana, March 28, 1905.

(Prepared by Dr. Walter A. Domer, Wabash, Indiana.)

CHARLES HENRY NIMAN, M. D.

MEMBER OF THE ELKHART COUNTY MEDICAL SOCIETY.

BORN IN LAGRANGE, INDIANA, APRIL 1, 1855.

DIED AT ELKHART, INDIANA, JANUARY 14, 1904.

AGED 48 YEARS.

Dr. Niman was a graduate of the Grand Rapids high school. He pursued a course of medical study in his father's office at Lagrange, graduating in 1879, at the Bellevue Hospital Medical College. He was engaged in the practice of medicine at Lagrange for seven years, and then removed to Elkhart, where he located and practiced for eighteen years more. He was a member of the Presbyterian Church. He was married to Miss Cora Repine, December 31, 1880. The widow and one son survive him. Dr. Niman was respected socially and professionally in the communities where he resided.

Death was due to disease of the heart.

(Prepared by Dr. A. C. Yoder, Goshen, Indiana.)

MADISON H. ROSE, M. D.

MEMBER OF THE BOONE COUNTY MEDICAL SOCIETY.

BORN IN MERCER COUNTY, KENTUCKY, DECEMBER 2, 1832.

DIED AT THORNTOWN, INDIANA, DECEMBER 16, 1904.

AGED 72 YEARS.

Dr. Rose attended the parochial schools at his home and later the Waverley Academy, Hanover College, and Ann Arbor School of Medicine, and later graduated from the medical department of the University of Buffalo in 1861. At the breaking out of the Civil War he enlisted with Company E, Eleventh Indiana Volunteer Infantry and later with Company A, Fifty-third Indiana Volunteer Infantry. In the latter regiment he was promoted from hospital surgeon to staff surgeon of his regiment. He was mustered out in 1865, and began the practice of medicine at Danville, Ind., where he remained a short time, and then took a course of lectures at Bellevue Hospital Medical College, receiving a degree in 1868. In 1869 he moved to Thorntown, and practiced there until his death. Dr. Rose was a devoted member of the Presbyterian Church. Fraternally he was identified with the I. O. O. F. and G. A. R., and professionally was a member of the Boone County Medical Association. He was twice married, the first time in 1865, to Mary D. Long, who died in 1866, the second time in 1869, to Miss J. B. Hilts, who survives him. To the latter union were born six children, of whom two sons survive.

Of him it can truthfully be said, he was a man in the fullest sense of the term; a doctor of whom all were proud, living a life of sacrifice and devotion; a citizen and Christian gentleman whom the community and church honored.

(Prepared by Dr. W. H. Williams, Lebanon, Indiana.)

HANNAH C. ROUS, M. D.

MEMBER OF THE SWITZERLAND COUNTY MEDICAL SOCIETY.

BORN IN SWITZERLAND COUNTY, INDIANA, JANUARY 12, 1854.

DIED AT VEVAY, INDIANA, MAY 12, 1905.

AGED 51 YEARS.

Dr. Rous obtained her preliminary education in the common schools of the county, and the Vevay High School, being a graduate of the latter. She also attended the Moore's Hill Normal School, preparing herself for teaching, which occupation she followed a number of years. Having in this manner acquired the means necessary to obtain her medical education, she entered the Department of Medicine and Surgery of the University of Michigan, at Ann Arbor, from which institution she graduated in 1886. She immediately began practice in her home city, Vevay, Ind., and continued actively engaged in her chosen profession until her fatal illness. In early life she joined the Methodist Episcopal Church and was a faithful and consistent member to the time of her death.

She was active and prominent in the County Medical Society, being Secretary from its organization until the last annual meeting when she declined re-election. In her death the county, State and American Medical Association lose one of their most valued and useful members. She died of cerebro-spinal meningitis, after a confinement to her bed of several weeks' duration. The entire medical profession of the city attended her funeral in a body.

(Prepared by Dr. J. P. Ward, Vevay, Indiana.)

OSA RAY SUMMERS, M. D.

MEMBER OF THE HENRY COUNTY MEDICAL SOCIETY.

BORN IN MIDDLETOWN, INDIANA, SEPTEMBER 12, 1874.

DIED AT MIDDLETOWN, INDIANA, JUNE 8, 1904.

AGED 30 YEARS.

Dr. Summers attended the common schools of Middletown, and afterwards entered the office of Dr. F. L. Thornburg for the study of medicine. He graduated from the Indiana Medical College in 1897, and began the practice of medicine in his native town. In 1903 he formed a partnership with his former preceptor. He was married in 1897 to Miss May Bell Sherman, who, with a son, survives him. He was a member of the K. of P. of the I. O. O. F. and Modern Woodmen. He was elected coroner of Henry County in 1900. In 1899 was President of the Henry County Medical Association. In 1901 he had an attack of rheumatism, succeeded by a severe hemorrhage of the lungs, and was forced to abandon his practice in Middletown, and, seeking a milder climate, went to Florida, where he located and engaged in the practice of his profession in that State. While there he held the position of surgeon to the F. E. C. R. R.

Believing his health restored he returned to Middletown, and resumed his practice at that place. During the winter and spring of 1904, after considerable exposures another attack of rheumatism resulted, terminating in pneumonia and endocarditis, causing his death.

Dr. Summers is sincerely mourned by a large number of personal and professional friends.

(Prepared by Dr. S. C. Waters, Middletown, Indiana.)

DAVID J. SWARTS, M. D.

MEMBER OF THE DEKALB COUNTY MEDICAL SOCIETY.

BORN IN ASHLAND COUNTY, OHIO, JUNE 30, 1832.

DIED AT BEAVER COUNTY, OKLAHOMA, MARCH 3, 1905.

AGED 72 YEARS.

Dr. Swarts's preliminary education was acquired in the common schools, such as were afforded in those early days, and in Vermillion Academy, in Haysville, Ohio, where he spent two years in diligent study. He began the study of medicine when twenty-four years of age, in the office of Drs. Robinson and Firestone, at Wooster, Ohio. In 1858 he entered the Medical College at Cincinnati and graduated from that institution in March, 1860. Afterwards he located at Auburn, Ind., in the practice of his profession.

He was married to Miss Vesta M. Ward, on August 28, 1862. The widow and two sons survive him.

In June, 1862, he enlisted in Company A, Hundredth Indiana Volunteer Infantry, and was commissioned as First Lieutenant. This office he resigned to accept a commission as assistant Surgeon. This position he filled until the close of the war, June, 1865. He was a member of the Baptist Church, also G. A. R.

On account of failing health a few years ago he partly retired from active practice, and went to Beaver County, Oklahoma, where he enjoyed freedom from public worry, and divided his time between his country home and his old home at Auburn, spending his winters in the South.

His remains were brought to Auburn, where he was buried.

(Prepared from newspaper slips furnished by Dr. F. C. Heath, Indianapolis, Indiana.)

DANIEL A. THOMPSON, M. D.

MEMBER OF THE INDIANAPOLIS MEDICAL SOCIETY.

BORN IN RUSH COUNTY, INDIANA, IN 1862.

DIED AT INDIANAPOLIS, OCTOBER 22, 1904.

Dr. Daniel A. Thompson, Professor of Diseases of the Eye in the Medical College of Indiana, died at his home in Indianapolis, Saturday afternoon, October 22, after an illness of three weeks.

Dr. Thompson was born in Rush County, Indiana, in 1862. He was educated in the city schools, graduating from the Indianapolis High School in June of 1881, and from the Medical College of Indiana in the spring of 1883. He served the following year as house physician in the Indianapolis City Hospital and in 1885 took post-graduate courses in the eye hospitals in London and Vienna. He then became associated with his father, Dr. J. L. Thompson, in his professional work, this relation continuing until his death. In 1890 he succeeded to his father's position as Professor of Diseases of the Eye in the college. He was also on the hospital staffs of the City Hospital, St. Vincent's Infirmary, the Deaconess Hospital, the City Dispensary and the Eleanor Hospital for Children. Of strong and vigorous physique, he took an active part in the State Militia Service for several years, becoming Commander of the Indiana Battalion of Light Artilery with the rank of major.

As a man all admired his rugged honesty and conscientiouness, his unswerving devotion to his ideals and his duty as shown in all the relations of life. In his chosen work his students and patients were inspired by his enthusiasm, his thoroughness, his keen accuracy and attention to details, and his constant effort to see things as they are. He was not a frequent writer, but he was a clear and forceful teacher, both didactic and clinical—an actor rather than a declaimer in the drama of our profession.

His inheritance was doubly happy; from his mother a bright and sunny temperament; from his father a high mentality and sense of justice and righteousness. He loved nature and all living things; he had a just and proper reverence for the lower forms of life; he had the religious reverence for the higher powers which make for righteousness, and he had in large measure reverence for the human kind of every degree.

Dr. Thompson was married in 1893 to Miss Mary Louise Beunrig. He leave a son and daughter, Jas. L. and Martha L. Thompson.

(Prepared by A. W. Brayton.

HORACE WARDNER, A.M., M. D.

MEMBER OF THE LAPORTE COUNTY MEDICAL SOCIETY.

BORN IN WYOMING COUNTY, NEW YORK, AUGUST 25, 1829.

DIED AT LAPORTE, INDIANA, MARCH 18, 1905.

AGED 76 YEARS.

Dr. Wardner first attended the public schools near his home, and also the Alfred Academy, which, in 1888, honored him with an A. M. degree. After studying ten years as a student and teacher in Western New York, he began the study of medicine under the preceptorship of Dr. Alley. He entered Rush Medical College in 1854, from which he graduated in 1856. Beginning his practice in Libertyville, Ill., he subsequently removed to Chicago and became demonstrator of anatomy in what is now the medical department of Northwestern University.

Commissioned Surgeon of the Twelfth Illinois Regiment in 1861, within a year he was promoted to be a Brigade Surgeon, and served as such in the Army of the Tennessee, until after the battle of Corinth, when he took charge of the U. S. general hospital at Mound City, Ill. He was subsequently assigned to be Assistant Medical Director on the staff of General Grant, at Vicksburg, and afterwards returned to Mound City, where he remained until the close of the war.

He founded St. Mary's Infirmary, at Cairo, Ill., and practiced his profession in that city for thirteen years, serving meanwhile as a member of the Illinois State Board of Health, and two years as its President. He was for twelve years Superintendent of the Southern Illinois Hospital for the Insane at Anna, Ill. He came into possession of the Interlaken Sanitarium at Laporte, in 1890, and removed there soon afterward—managing the institution with much success until 1900, when he disposed of it to a syndicate and practically retired.

He was for a number of years President of the Laporte Medical Association, and a member of the local board of the U. S. Pension Examining Surgeons. He was a member of the Indiana Medical Association, also a member of the Loyal Legion, and the Society of the Army of the Tennessee. He was a Mason of exalted rank, and a vestryman, and a devoted member of the Episcopal Church.

He was married on February 16, 1858, to Miss Louise Rockwood of Sheboygan, Wis., who survives him. She was with him as a nurse through his service as army surgeon, and assisted in many severe battles of the war, nursing the wounded soldiers where bullets and shells were flying thick and fast.

The barest outline of such a life is a sufficient eulogy.

His death was hastened by blood poisoning, caused by getting a sliver under his thumb, fourteen years prior to his death.

(Prepared by Dr. F. A. McGrew, Laporte, Indiana.)

EBER K. WATTS, M. D.

MEMBER OF THE WAYNE COUNTY MEDICAL SOCIETY.

BORN IN MICHIGAN, DECEMBER 11, 1854.

DIED AT RICHMOND, INDIANA, JANUARY 3, 1905.

AGED 50 YEARS.

Dr. Watts graduated in 1870 from the University of Michigan. He was a member of the Wayne County Medical Association and was also a member of the First Presbyterian Church of Richmond, Ind. His professional associates found in him a broad-minded and progressive practitioner of medicine. His geniality, his ready sympathy and his sincerity won him firm friends. Conscientiousness was a marked trait of his character. At the very moment of his being stricken he was in attendance upon a sufferer, one of his patients near Richmond, Ind. He left a widow.

(Prepared by Dr. D. W. Stevenson, Richmond, Indiana.)

GEORGE WALKER WELBORN, M. D.

MEMBER OF THE POSEY COUNTY MEDICAL SOCIETY.

BORN IN EVANSVILLE, INDIANA, MARCH 17, 1844.

DIED AT ST. LOUIS, MISSOURI, MARCH 23, 1905.

AGED 61 YEARS.

Dr. Welborn was educated in the public schools of the county where he resided, and later at Greencastle, Ind. He received his medical training at the Evansville Medical College, from which schools he graduated in 1876. From the time of his graduation until his death he practiced at Stewardsville, Ind. Dr. Welborn took a prominent part in local politics, being a lifelong Democrat. He was also a member of the G. A. R., having served in the hospital corps of the Sixtieth Indiana Volunteer Regiment; part of the time in the field, and part on detached duty. In 1867 he married Miss Martha T. Stinneth, she, with four children, survives him. He was a charter member of the Posey County Medical Association, and served a number of times as President of that body. His loss is keenly felt by those of his acquaintances, lay and professional. He was a clean, conservative, and conscientious man. He died at the Deaconess Hospital at St. Louis, Mo., to which place he had gone for an operation for the relief of a prostatic trouble. An operation for perineal prostatectomy was performed.

The result for several days promised well, but unlooked for complications developed, and he died as the result of heart failure following peritonitis.

(Prepared by Dr. R. M. Stormant, Stewardsville, Indiana.)

JOSEPH M. WISHARD.

MEMBER OF THE JOHNSON COUNTY MEDICAL SOCIETY.

BORN IN JOHNSON COUNTY, INDIANA, JANUARY 1, 1838.

DIED AT GREENWOOD, INDIANA, MAY 30, 1905.

AGED 77 YEARS.

Dr. Wishard attended the country schools near his home. Later he attended the Rush Medical College, and also the Ohio Medical College, graduating from the latter institution. He located in Greenwood, Ind., where he continued to practice until the time of his death. He gave three years of his life to his country as Surgeon of the Fifth Regiment Indiana Cavalry. He was twice married. He was an honored member of the Johnson County Medical Association, and a member of the I. O. O. F. He died after a lingering illness following a severe injury.

(Prepared by Dr. J. H. Lanam, Franklin, Indiana.)

DAVID HOOVER YOCKEY, M. D.

MEMBER OF THE WAYNE COUNTY MEDICAL SOCIETY.

BORN IN DELAWARE COUNTY, INDIANA, NOVEMBER 17, 1854.

DIED AT RICHMOND, INDIANA, OCTOBER 7, 1904.

AGED 50 YEARS.

Dr. Yockey began his medical studies in the office of Dr. S. V. Jump of New Burlington, Ind., graduating at the Medical College of Indiana in the class of 1883, and the same year located in Blountsville, Ind. Our subject was an enthusiastic member of the Henry County Medical Society and the Indiana State Medical Society, and was held in high esteem by all with whom he came in contact, not only as a valuable member of the society, but likewise as a man of sterling character, and noble and lofty aim. He removed to Richmond a few months prior to his death.

The year of his graduation he was married to Miss Zella Ross, the daughter of Dr. Jont Ross, whom he succeeded in practice. He left a widow and one son. Dr. Yockey was a member of the Methodist Episcopal Church, and the Independent Order of Odd Fellows, of both of which he was a consistent and honored member.

He joined the Wayne County Medical Society on the 6th of October, 1904, and died the following morning.

(Prepared by Dr. Edgar S. Ferris, New Castle, Indiana.)

REPORT ON TUBERCULOSIS.

BY THEODORE POTTER, A. M., M. D., OF INDIANAPOLIS.

Two years ago the State Medical Association, recognizing the movement rapidly spreading over the world and having for its object the suppression of tuberculosis, appointed a committee to present a report upon this great scourge. In the report presented to the Association last year we thought it proper, in view of this new world-movement, to review briefly the whole matter in a statement which might serve as a guide to our action. We undertook to set forth the facts concerning the prevalence of tuberculosis and to emphasize the factors now known to be chiefly responsible for this ominous prevalence. We also undertook to explain the origin, progress and purposes of the modern anti-tuberculosis crusade, to summarize briefly the sociological and medical knowledge which underlies and directs it, and the things which seem most important for its successful outcome.

Having once for all reviewed these fundamental matters, it seems proper that our present report should be brief and be devoted chiefly to the progress of the past year.

Pursuant to the resolutions incorporated in the report for 1904, and which were adopted by the Association, the need for a State institution for the treatment of tuberculosis was brought before the Governor and the State Legislature. It soon became evident, however, that, with other pressing matters taking precedence, no definite action toward the establishment of such an institution could be expected from the Legislature which met in January, 1905. The Legislature and the Governor were convinced of the need for additional accommodations for the insane. The commission previously appointed to consider the needs of those suffering from epilepsy was prepared to present and defend a favorable report upon the question of establishing a State farm for epileptics. In this movement the support of some of the most influential newspapers of the State was enlisted. The Committee on Epilepsy, which had visited and studied the different epileptic colonies of this country, had, in support of its recommendations, the examples of New York and Massachusetts, which had established institutions for epilepsy before entering upon the work of founding tuberculosis sanatoria. Whether it was wise, and in the best interests of the public health and public economy to allow the comparatively minor question of epilepsy to take precedence over the great and pressing problem of tuberculosis, need not now be discussed. It was done, and the way is now cleared for an untrammeled presentation of the public question whether the State should not proceed to establish a curative and educational institution for tuberculosis.

Thanks to the sincere interest of Governor Hanly, supported by certain members of the Legislature who had studied the question, a joint resolution was passed for the appointment of a commission of five to investigate and report to the Legislature of 1907 upon the advisability of establishing a State sanatorium for tuberculosis. This commission, as appointed by the Governor, consists of Senators A. G. Cavin, of Vigo County, and C. E. Wood, of Jackson County; Representatives L. F. Gage, of Spencer County, and R. N. Elliott, of Fayette County, and Dr. Theodore Potter, of Marion County. The commission is organized, with Hon. L. F. Gage as chairman and Dr. Potter as secretary. It will inspect such institutions in this country as may afford the desired information, and will endeavor to present a report which, in the directing language of the Governor, may furnish a reliable basis for action by the next Legislature. The chairman and secretary of the commission have recently attended, at the suggestion of the Governor, the meeting of the National Association for the Study and Prevention of Tuberculosis, gaining thereby much valuable information for the commission and getting promptly into touch with a number of those who are most directly concerned in the management of the tuberculosis sanitoria and most actively interested in the whole anti-tuberculosis movement.

A State Anti-Tuberculosis Society has been organized, designed to include both physicians and laymen, but owing to the peculiar legislative conditions already referred to, it has not as yet entered upon an active propaganda. Growing experience indicates that the chief and best field for such organization is that of the sociological aspect of tuberculosis, seconding the work of physicians and sanitarians, and bringing popular and legislative support to such work. For, after all, the physicians and sanitarians must be chiefly responsible for the suppression of tuberculosis.

During the past year several States, notably New Jersey, Minnesota and Illinois, have entered upon the work of providing institutional treatment for early tuberculosis among the poor, and active efforts are being made toward the same end in many other States. Provision for advanced cases, as a measure of mercy to the sick and protection and economy to the public, is being extended in many communities, either independent of or in connection with already existing hospitals. The proper care of the tuberculous insane and prisoners is receiving more and more attention. Dr. Sharp, the medical officer in charge of the State Reformatory at Jeffersonville, has been successfully endeavoring to set an example in this direction, as have the medical superintendents of other Indiana State institutions. As yet but two municipalities have made any special provision for the care of the tuberculous, namely, Indianapolis and Fort Wayne, and in both instances in a somewhat tentative and inadequate manner. The Indianapolis City Health Board has now under way negotiations looking toward the care of advanced cases among the poor at the County Infirmary farm, thus leaving the city more free to deal financially with the question of the early cases. Should this movement be carried out and the experiment prove successful, it may set an influential and val-

uable example to other communities. All over the country, and in our own State, the universal problem of dealing with tuberculosis in public institutions is receiving more intelligent attention, as in the County Orphanage of Bartholomew County, under the advice of the President of our State Association, and we may expect to see more good work in this direction with each passing year. The county societies have here a field for great influence and usefulness.

The most notable event of the year, in connection with the tuberculosis crusade, was the meeting of the National Association for the Study and Prevention of Tuberculosis, at Washington, D. C., in May. Here were gathered several hundred of the practicing physicians, pathologists, sanitarians and laymen, specially interested, under the presidency of the eminent and beloved Dr. Edward L. Trudeau, of Saranac, N. Y. The addresses and discussions of both physicians and laymen were most interesting and instructive, and the general impression made was significant of the influence which this organization is destined to exert upon the study and treatment and prevention of tuberculosis in this country. Indiana was represented at this meeting by the President of our Association, as a delegate from the State Anti-Tuberculosis Society; by Drs. Tucker and Hurty from the State Board of Health; by Dr. Keene, from the Indianapolis Board of Health, and, as already stated, by two members from the State Tuberculosis Commission.

The burden of the message from this association, as from all agencies working in this field, was rational treatment for the early and hopeful cases, and preventive measures against the plainly excessive prevalence of the disease. For the most successful attainment of the first object, the best means is the systematic application of the plan which combines fresh air, abundant nourishment, and regulated daily life, under constant medical supervision, either with or without the possible special advantages of special climatic conditions.

For the largest measure of success in the prevention of tuberculosis are needed, first, a general and systematic application of sanitary measures on the part of physicians and health boards, having in view the predisposing causes of the disease and its infectious nature; second, better and more general provision for the institutional care of advanced cases among the helpless, the ignorant and the careless; third, as an individual preventive and a general educational measure, the establishment of public sanitoria for the treatment of cases presenting a real hope of arrest or cure. And all of these measures to be based upon and supported, as advised by Dr. Osler, in his last address to the profession in this country, by a campaign of sane and sound education among both physicians and the public.

Tuberculosis is an infectious disease, caused by certain now well known bacteria, invited by various predisposing agencies, but especially by unhygienic confinement, capable, under proper conditions, of arrest and a return to a useful life in a large proportion of cases detected early: and in large measure a preventable disease. The next generation will see this preventive possibility realized.

REPORT OF COMMITTEE ON STATE MEDICINE AND HYGIENE.

BY J. N. HURTY, CHAIRMAN, INDIANAPOLIS.

STATE MEDICINE.

Laws and Amendments of Laws Pertaining to State Medicine, Passed by the Sixty-Seventh Indiana General Assembly.

Medical: "An act in regard to the State Board of Medical Registration and Examination and concerning eligibility to examination before such board."

This act was a compromise between scientific medicine and a transitory medical fad known as osteopathy. The osteopaths presented a bill creating a special board for the examining, registering and licensing of members of their school. The existing State Board of Registration and Examination opposed the bill, and finally a compromise was made and the law with the above title was passed. This law adds one member to the existing board, making six members in all, and provides "That any osteopathist now practicing in and a resident of the State of Indiana, and holding a diploma from a reputable college of osteopathy, as determined by the State Board of Medical Registration and Examination, shall be eligible to an examination on proper application to the said board, and should he pass an examination, that he shall be granted a certificate for a license forthwith to practice osteopathy in Indiana."

Court Decisions Concerning the Medical Law: There have been no lower and no Supreme Court decisions which in any way detract from the original form of the law. A score or more prosecutions brought for illegal practice have all been won. It remains true, however, that the traveling advertising quack who has a license can pursue his infamous work.

Dental: No amendments to the existing dental law and no new statutes governing dentistry were passed.

Dental Court Decisions: Two decisions were rendered during the year, both pertaining to the illegal practice of dentistry. No case occurred pertaining to the construction or constitutionality of the law.

Pharmaceutical: No amendments to the existing law and no new statutes.

Pharmaceutical Court Decisions: None of importance. Only one or two prosecutions on account of illegal practice.

Hygiene: Two statutes directly concerning hygiene and sixteen indirectly connected therewith were passed.

First. State Laboratory of Hygiene: This law creates a "State Laboratory of Hygiene," as a department of the State Board of Health and under the general control of said board. The laboratory shall be at Indianapolis, shall have a superintendent "learned and skilled in bacteriology and pathology" and "a skilled chemist." It "shall be used for making analysis of foods and drugs for the purpose of enforcing the pure food and drug laws, for making sanitary analyses, pathological examinations and studies in hygiene and preventive medicine, to aid in the enforcement of the health laws, and for no other purpose." All work shall be "exclusively and entirely for the public benefit, and no fees shall be charged." This laboratory, an absolute essential for a modern State Board of Health, was secured only after six efforts before the Legislature. Since the going into effect of the law, April 16, 1905, the State Board has energetically proceeded to open and to start in active work this new department, and it is hoped it will be open for public services by early fall.

Second. A State Tuberculosis Commission: This commission was created by a joint resolution introduced into the Senate. It gives power to appoint five commissioners, two from the Senate, two from the House of Representatives, and the fifth a practicing physician. The said commission is to "investigate the need of a hospital for the treatment of tuberculosis in this State and the work of such institutions in other States." The members of the Commission are: Dr. Loren Gage, Grandview, Chairman; Dr. Theodore Potter, Indianapolis, Secretary, and R. N. Elliott, Connersville; A. G. Cavins, Terre Haute; Carl E. Wood, Seymour.

Third. Laws Indirectly Relating to Hygiene: (1) Prescribing requirements for nurses. (2) Authorizing the establishment of county hospitals. (3) Creating an epileptic village. (4) Creating a county drainage commissioner. (5) Concerning public parks. (6) Control of lawn and shade trees. (7) Disposal of garbage by removal or cremation in cities of the fifth class. (8) City departments of health and charities. (9) Concerning sprinkling and sweeping of streets in cities. (10) Establishing sewers and drains in cities. (11) Saturday half holidays in cities of 35,000 or more. (12) Examination of embalmers. (13) Controlling the sale of cigarettes on account of havoc to morals and health. (14) Creating a coal mine inspector. (15) Protection of forests. (16) Marriage law forbidding marriage of those afflicted with a transmissible disease.

The marriage law demands special attention. It is a marked deviation from the ordinary, inasmuch as it forbids the marriage of epileptics, insane, paupers, and those afflicted with a transmissible disease. It further makes it the duty of the State Board of Health to furnish forms of application to marry to the county clerks and gives power to the Board to revise the forms from time to time, as may be advisable. It may be that this law affords an opportunity for the State Board of Health to do something toward restraining the evils which come to females through the transmission of venereal diseases by infected husbands.

Failed: The bill for a new health law failed. This bill provided for the accurate collection, tabulation, analysis and publication of deaths, births and contagious diseases, extended the terms of the health officers

to four years, provided adequate compensation, and gave police powers for the better enforcement of the health laws. This bill passed the Senate and also passed to third reading in the House. There it met with the violent opposition of the Speaker, who held it up, thus bringing its defeat. It is a matter of regret that the economic and humane work to be done through this bill has been defeated.

EPIDEMICS IN INDIANA IN 1904.

Smallpox was epidemic in 167 localities. In that year in the whole State 6,185 cases were reported, with 97 deaths. It is certain that not over 70 per cent. of all smallpox cases were reported. At this estimate there were 8,040 cases in all during the year. The anomaly still exists of physicians who can not diagnose aberrant smallpox. In numerous instances it is not even suspected when unquestionably present, and in other instances it has all manner of names given to it. The very fatal form known as black smallpox has appeared in three localities. The last time at Indianapolis being in a woman whose daughter died in St. Louis of the malady.

Diphtheria was epidemic in only seven places. The deaths numbered 284, and there were 2,766 cases reported, against 423 deaths and 3,968 cases in 1903—a marked decrease.

Scarlet fever was epidemic in 26 localities. There were 192 deaths and 3,003 cases, against 164 deaths and 2,907 cases in 1903. The disease was very mild in most instances. That scores of cases occurred without recognition is a conclusion forced upon us by many reports and investigations.

Typhoid fever was epidemic in 76 localities. It prevailed unusually in Indianapolis in September and October. The total deaths numbered 1,013 and the cases reported 8,087. It may be pertinent to remark that not a little of the typhoid fever which oppresses Indiana is directly attributable to so-called "economy." Even in the presence of death and numerous cases, officials when exhorted to do those things necessary to control and prevent typhoid, hesitate or refuse because of the cost. It thus appears that money, or perhaps political buncomb, is regarded of higher importance than health and happiness. It is a pleasure to note that typhoid is decreasing, as appears from the following table:

Population, Estimated According to U. S. Census Increase from 1890 to 1900.	Total Number of Deaths.	Annual Death Rate Per 1,000 Population.	Typhoid Fever Deaths for Each Year.	Annual Death Rate Per 100,000 Population.
1900.....2,516,462	35,516	14.1	1,440	57.2
1901.....2,548,476	36,544	14.3	1,198	47.0
1902.....2,581,222	34,069	13.1	1,217	47.1
1903.....2,613,622	33,892	12.9	1,013	38 7
1904.....2,646,022	37,240	14.0	1,013	38.2

Diarrheal diseases continue their deadly work. There were 1,629 deaths under 5 years of age in 1904, against 1,449 in 1903, the rates being, respectively, 61.3 and 57.5 per 100,000 of people. As want of proper care and improper feeding are the principal inducing causes of diarrheal affections, it plainly appears that physicians have much to do in the line of instructions in these lines. The State Board of Health distributed 10,000 circulars dealing with the prevention of diarrheal diseases in 1904, and the same number will be distributed in 1905.

Pneumonia increased in 1904, as the following table shows:

AVERAGE NUMBER OF DEATHS FOR FIVE YEARS, 1900-1904.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
471	526	555	414	236	96	60	64	75	114	183	308

NUMBER OF DEATHS IN 1904.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
529	680	714	534	305	99	72	50	70	116	223	320

The deaths in 1904 numbered 3,723, and 2,560 in 1903. This is an increase of 6.3 per cent. In Chicago and New York the increase in pneumonia has brought out much comment from the lay as well as the medical press, and in both cities the cases are now required to be reported, and preventive instructions are published. It is surely high time that this Association took some action.

Tuberculosis seems to be increasing in Indiana, as appears by the following table:

Population, Estimated According to U. S. Census Increase from 1890 to 1900.	Total Number of Deaths.	Annual Death Rate Per 1,000 Population.	Consumption Deaths for Each Year.	Annual Death Rate Per 100,000 Population.
1900.....2,516,462	35,516	14.1	4,645	184.5
1901.....2,548,476	36,544	14.3	4,662	182.9
1902.....2,581,222	34,069	13.1	4,397	174.2
1903.....2,613,622	33,892	12.9	4,414	168.8
1904 2,646,022	37,240	14.0	4,978	188.1

The average rate for the last five years was 159.7, and for 1904 the rate is 188.1, which is an increase in rate of 17.7 per cent, in 1904 over

the average for the last five years. The people are certainly awakening to the importance of fighting tuberculosis. This is shown by the interest taken in the matter by the newspapers and by the numerous letters received from citizens at the State Board.

At the first annual meeting of the National Association for the Study and Prevention of Tuberculosis, held at Washington, D. C., May 18 and 19, 1905, many features of the tuberculosis prevention and cure problem were considered, but chief among them was the question of climate. The conclusions were:

First. Climate is not essential or even the most important factor in its treatment.

Second. Fresh air, rest and nourishing food in abundance are necessary, and the patient must be regular in all of his habits with regard to them.

REPORT ON PATHOLOGICAL EXHIBIT.

BY DR. F. B. WYNN.

Recent expense in the reorganization of the State Medical Association has made it necessary to curtail the outlay in the matter of the scientific exhibit. Three serial groups were presented, each excellent in their way and practically instructive.

1. Series of dry bone specimens, illustrative of tuberculosis, osteomyelitis, and osteoporosis as seen in syphilis. Some of these specimens, prepared by Dr. Charles H. Parsons of Rushville, were especially beautiful.

2. Skiagrams. This beautiful series of twenty was prepared by Dr. A. M. Cole of Indianapolis, and showed fractures, gallstones, renal and vesical calculi and pulmonary lesions.

3. Series of Heart Lesions. These showed beautifully (a) the various types of pericarditis, viz., fibrinous, fibrous obliterating and tuberculous forms; (b) myocardial affections, as lipomatosis, fatty degeneration, fibrous sclerosis senile heart, and aneurism; (c) endocardial lesions—acute vegetations, thrombi, ulcerative endocarditis, arteriosclerotic changes and deforming valvular lesions, causing insufficiency or stenosis of the valves.

REPORT OF THE PROCEEDINGS OF THE COUNCIL.

To the Members of the House of Delegates of the Indiana State Medical Association:

According to the constitution it becomes necessary for the President of the Council to present to you a report of the proceedings of the Council, and the work done by the councilors of the several districts during the year just closed; but as the active correspondence with the various councilors has been carried on from the Secretary's office, the President of the Council has requested that the Secretary furnish the annual report. I therefore submit the following:

There are at the present time 79 regularly chartered county medical societies in the State, which gives a medical organization for every county having a sufficient number of duly qualified physicians to warrant the organization of a society. In those counties having too few physicians to warrant the organization of a society, the physicians of such counties have been invited to join societies in neighborng counties, and in most instances have accepted the invitation.

Followng the last annual meeting each councilor was urged to put himself into close relationship with the officers of the county societies in his district, to the end that dates and places of meeting of the various county societies in his district could be obtained and whenever advisable such meetings be attended by him. Each councilor was also advised to urge upon the officers of the county societies in his district the advisability of holding regular meetings at least once every month, and at such meetings to have a scientific program of sufficient interest to invite the attendance of every progressive physician in the county. In those counties where meetings were held irregularly, and with poor attendance, the councilor was asked to put in his main work with a view to stimulating scientific and social interest, and in other ways furthering the medical organization movement. Each councilor was particularly urged to personally attend, at his convenience, as many meetings as possible in the backward counties, with a view to encouraging society work, and asked to call upon the State officers and councilors in adjoining districts, or prominent medical men in surrounding counties, to aid him in the work of building up societies in the apathetic counties. Each councilor was also urged to organize a district society in his district, providing the district as comprised at present was arranged so as to make it inadvisable to alter it in the proposed plan of redistricting the State.

The final reports of the councilors show that favorable progress has

been made in every district of the State. Not only has there been gains in membership, but the number and character of meetings in the majority of the county societies has changed for the better as a result of the councilors' work. In a few districts difficulties have been encountered in establishing and maintaining medical organizations in one or two counties. In other words, in a very few counties it has been impossible to bring the physicians together except when the councilor called a meeting and furnished the program, while in one or two instances even the personal appeal of the councilor has not met with success in bringing the medical men together. Lack of harmony exists in a few of these counties so far as reported, but the inability to maintain a medical organization has depended entirely upon a general lack of progressiveness, and a feeling of apathy, both scientific and social, toward the work of medical organization. These societies should receive earnest attention, and any districts having such societies within their boundaries should be the object of the influence and labors of the officers and all prominent workers in the Association. It will be a special act of business at one or more council meetings of this Association to devise ways and means for stimulating social and scientific interest in these backward counties.

Considering the duties required of a councilor, and the unpleasantness many times experienced in the work, the results secured by the present council, during the year just closed, should be a source of satisfaction to all those of the Association who are interested in the progress of medical organization.

So far as is now known there are no differences in any of the county societies which will require the action of the Council to settle, and, generally speaking, a feeling of harmony and good fellowship prevails in the regular medical profession over the entire State.

It is also a pleasure to note that the councilors' expenses for the current year are fully fifty per cent. less than they were last year, and this economy has been brought about by the efficient work of the preceding year when more difficulties were encountered in carrying on the organization work, and with a correspondingly increased expense. In the judgment of the officers of the Council, however, the Association can well afford to pay additional expenses for additional visits of the councilors to the various county societies of the State, for in a large measure the growth and prosperity of the county organizations depend upon the work of the councilors, and the councilors should not be expected to stand the actual expenses incurred in visiting the county organizations when they so cheerfully and willingly donate their time.

The work of the Council during the past two years has demonstrated that the councilor districts as at present arranged are not adapted to the best and most efficient work on the part of individual councilors. In some districts a few of the county medical societies are more easily reached by the councilor in an adjoining district, while in other instances the districts are so large, so irregular in shape, and have such poor railroad accommodations as a district that a change in their boundaries

seem warranted. After carefully considering this matter and consulting the councilors and prominent medical men in the various districts, the following changes in the districts is recommended for your consideration and official approval:

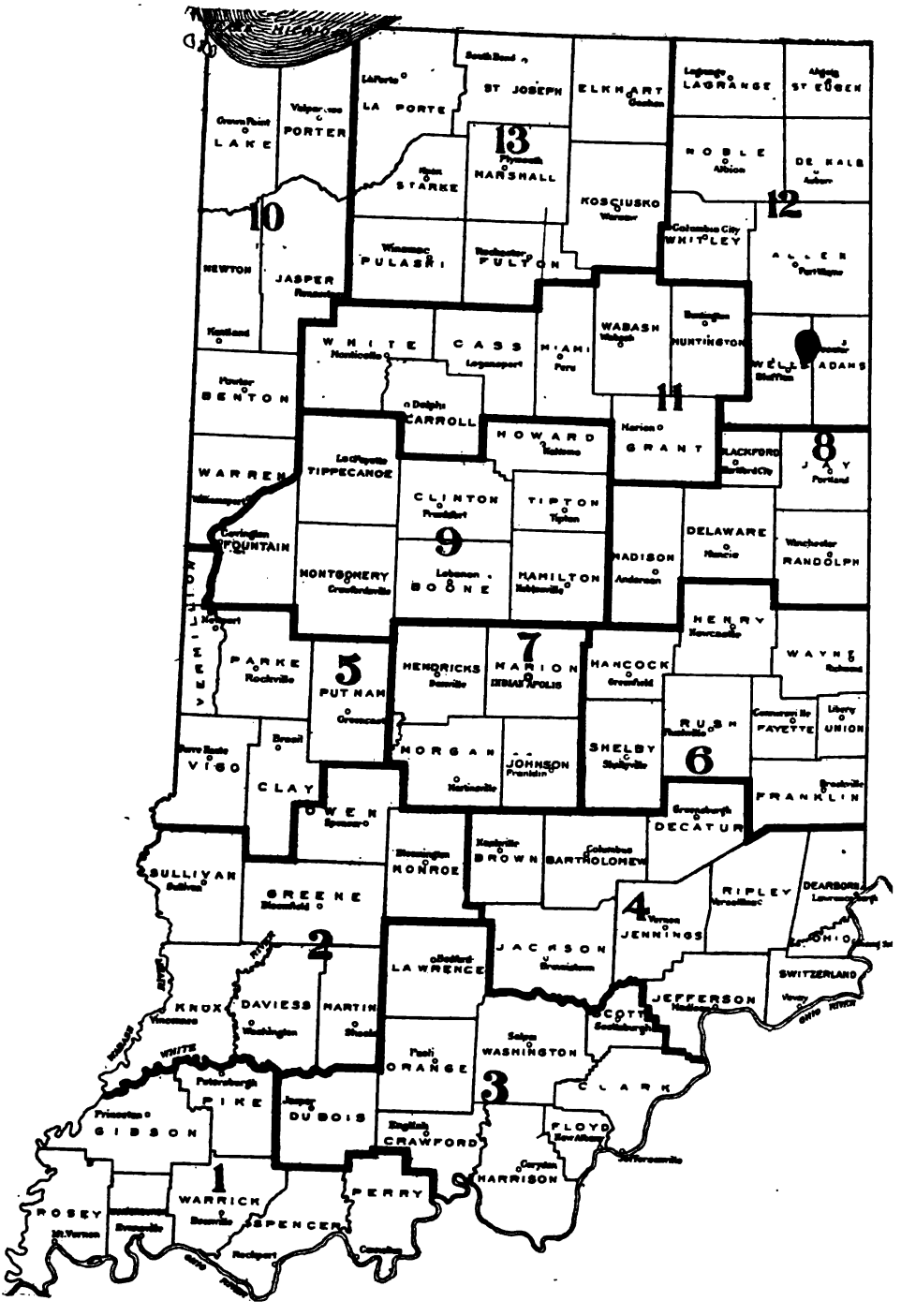
First District, add Perry County; Second District, take out Lawrence County; Third District, add Lawrence County and take out Perry County; Fourth District, take out Johnson County and add Decatur County; Fifth District, take out Hendricks and Morgan counties; Sixth District, take out Decatur County; Seventh District, add Johnson, Morgan and Hendricks counties; Eighth District, add Blackford County, and take out Adams and Wells counties; Ninth District, add Tippecanoe County and take out Carroll County; Tenth District, take out Tippecanoe and White counties; Eleventh District, take out Blackford County, and add Carroll and White counties; Twelfth District, add Wells and Adams counties; Thirteenth District, no change.

If these changes are approved, the Council will at once prepare a map showing the new councilor districts, copy of which will be furnished all councilors and officers of county societies. The work of organizing district societies will also be carried to a successful termination immediately following the adoption of this redistricting plan.

Respectfully submitted,

ALBERT E. BULSON, Jr.,
Secretary.

[The changes recommended were approved, and the map as prepared by Dr. Bulson is here presented. Duplicates of this map may be had of Dr. Bulson on application.—Editor.]


LAKE
PORTER
LA PORTE
ST JOSEPH
ELKHART
LAGRANGE
STEUBEN
NOBLE
DE KALB
10
13
MARSHALL
STARKE
KOSCIUSKO
12
WHITLEY
ALLEN
NEWTON
JASPER
PULASKI
FULTON
WABASH
HUNTINGTON
WELLS
ADAMS
WHITE
CASS
MIAMI
BENTON
CARROLL
HOWARD
11
GRANT
BLACKFORD
JAY
8
WARREN
TIPPECANOE
CLINTON
TIPTON
DELAWARE
RANDOLPH
FOUNTAIN
MONTGOMERY
9
BOONE
HAMILTON
MADISON
HENRY
WAYNE
PARKE
5
PUTNAM
HENDRICKS
7
MARION
INDIANAPOLIS
HANCOCK
RUSH
FAYETTE
UNION
VIGO
CLAY
MORGAN
JOHNSON
SHELBY
6
FRANKLIN
OWEN
DECATUR
SULLIVAN
GREENE
MONROE
BROWN
BARTHOLOMEW
RIPLEY
DEARBORN
4
JENNINGS
JACKSON
LAWRENCE
SWITZERLAND
JEFFERSON
KNOX
DAVIESS
MARTIN
2
ORANGE
WASHINGTON
SCOTT
CLARK
PIKE
DUBOIS
3
FLOYD
GIBSON
CRAWFORD
HARRISON
1
WARRICK
PERRY
POSEY
SPENCER

REPORT OF THE HOUSE OF DELEGATES.

The House of Delegates met at 8 p. m., June 6th, in informal session and, no quorum being present, adjourned until 2 p. m., June 7th, when reports from the Secretary, Treasurer and Council were received. The Secretary's report showed a paid membership of 108.

The Treasurer's report showed balance of $67, with all indebtedness paid (exclusive of this meeting).

Report of the Council showed 89 chartered societies. Some changes were made in the boundaries of councilor districts. Amendments to by-laws were presented and passed at a subsequent meeting, making first meeting of House of Delegates at 2 p. m. of first day of annual session, instead of 8 p. m. of preceding day, and making it compulsory for those desiring to read papers to furnish the Secretary a synopsis of such papers, of not less than 50 nor more than 150 words, at least 30 days preceding date of meeting, such synopsis to be printed in the program. The Secretary was authorized to contract with a stenographer for surgical section at $10 per day, expenses, and 35 cents per page of transcript.

An emergency fund of $100 was established for extra expenses for clerical work, postage, etc., in the Secretary's office.

Reports were received from the committees on Public Policy, Inebriety, Tuberculosis and State Medicine.

Resolution of American Medical Association on examination of eyes of school children was indorsed.

A committee on prophylaxis of venereal diseases was added to list of standing committees, and it was voted that a special committee of five be appointed from the House of Delegates with a similar committee from the Council to investigate and consider the whole question of publication of transactions and report at next annual meeting.

The Secretary was directed to telegraph to the Indiana Pharmaceutical Association, reciprocating their courteous good wishes, and to write a letter of thanks to the Secretary of the Mississippi Valley Medical Association for invitation to its meeting at Indianapolis next October.

A resoluton was adopted thanking the General Assembly, Governor, Lieutenant-Governor and Speaker of House of Representatives for action establishing State Laboratory of Hygiene.

The President was authorized to appoint all the standing committees.

Winona was unanimously chosen as place of meeting for 1906, and the following officers were elected:

President—Geo. H. Grant, Richmond.

Vice-Presidents—David W. Stevenson, Richmond; Harry C. Sharp, Jeffersonville; W. R. Davidson, Evansville.

Secretary—F. C. Heath, Indianapolis.

Treasurer—Albert E. Bulson, Jr., Ft. Wayne.

Delegates to American Medical Association for two years—W. N. Wishard, Indianapolis; C. H. Emery, Bedford.

The councilors for First, Fourth, Seventh, Tenth and Thirteenth districts were re-elected for three years, viz.: Drs. Davidson, Stemm, Wishard, Blinks and Daugherty.

The Committee on Arrangements reported:

Total expenses at West Baden	$264 13
Collected from exhibitors	192 50
Shortage to be paid from Society treasury	$71 63

F. C. HEATH.

SECRETARY'S REPORT.

The year shows a small increase over last year when we reached our high-water mark, 2,107. We now have 2,169 members. No report has been received from the Jasper-Newton County Society, although numerous letters have been written to the secretary and other members. We have no organizations in Brown, Warren or Ohio counties, but several members from these counties belong to the societies of adjoining counties. While some of the societies have made notable gains, others unfortunately have met with serious losses.

During the year a card index by counties has been made of all the members of the State association and is ready for use in the Secretary's office. From this the American Medical Association will be furnished material for their directory of members now being prepared. As not more than one doctor in five sent in the information asked for on blanks, it was deemed best to use Report of State Board of Medical Registration and Examination and only put in name, residence, college, date of graduation and date of license.

F. C. HEATH, Secretary.

REPORT OF TREASURER.

Mr. President and Members of the House of Delegates:

Your Treasurer respectfully submits the following report for the year ending June 7, 1905:

Albert E. Bulson, Jr., Treasurer, in account with the Indiana State Medical Association for the year ending June 7, 1905:

1904. DEBIT.

May 20, to cash on hand	$438 16
May 20, to cash from Secretary, dues collected	1,904 00
Oct. 10, to cash from Secretary, dues collected	192 00
	$2,534 16

CREDIT.

By cash to Secretary, honorarium and incidental expenses	$310 20
By cash to Chairman Committee on Pathology, exhibit expenses at 1904 meetings of the Indiana State Medical Association	100 00
By cash to Chairman of Committee on Publication, honorarium	100 00
By cash to Chairman of Committee on Necrology, honorarium and incidental expenses	11 30
By cash to J. B. Champion, stenographer, 1904 meeting	65 00
By cash to Mrs. S. H. East, stenographer, 1904 meeting	35 00
By cash to Sentinel Printing Company	53 20
By cash to Wm. B. Burford, 1904 transactions	1,050 46
By cash to S. H. East	25 00
By cash to Cleary & Bailey, printing	47 75
By cash, Adams Express Company	8 30
By cash to Councilors, 13 accounts	460 09
Total	$2,266 30
Balance on hand	267 86
	$2,534 16

Your treasurer has on hand the unpaid bills of the councilors for expenses incurred during the year, amounting to approximately $200, which upon approval will be paid, leaving a balance of approximately $67 in the treasury with all indebtedness of the Association paid.

Respectfully submitted,

ALBERT E. BULSON, Jr.,

Treasurer.

CONSTITUTION.

Article I.—Name of the Association.

The name and title of this organization shall be the Indiana State Medical Association.

Article II.—Purposes of the Association.

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Indiana, and to unite with similar societies of other states to form the American Medical Association; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of state medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public, in the prevention and cure of diseases, and in prolonging and adding comfort to life.

Article III.—Component Societies.

Component Societies shall consist of those county medical societies which hold charters from this Association.

Article IV.—Composition of the Association.

Section 1. This Association shall consist of members, delegates and guests.

Sec. 2. Members. The members of this Association shall be the members of the component county medical societies.

Sec. 3. DELEGATES. Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component societies in the House of Delegates of this Association.

Sec. 4. Any distinguished physician not a resident of this State who is a member of his own State Association may become a guest during any annual session on invitation of the officers of this Association, and shall be accorded the privilege of participating in all of the scientific work for that session.

ARTICLE V.—HOUSE OF DELEGATES.

The House of Delegates shall be the legislative and business body of the Association, and shall consist of (1) Delegates elected by the component county societies, (2) the Councilors, and (3), *ex officio,* the President and Secretary of this Association.

ARTICLE VI.—COUNCIL.

The Council shall consist of the Councilors, and the President and Secretary, *ex officio.* Besides its duties mentioned in the By-Laws, it shall constitute the Finance Committee of the House of Delegates. Five Councilors shall constitute a quorum.

ARTICLE VII.—SECTIONS AND DISTRICT SOCIETIES.

The House of Delegates may provide for a division of the scientific work of the Association into appropriate Sections, and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VIII.—SESSIONS AND MEETINGS.

Section 1. The Association shall hold an annual session, during which there shall be held daily general meetings, which shall be open to all registered members and guests.

Sec. 2. The time and place for holding each annual session shall be fixed by the House of Delegates.

Article IX.—Officers.

Section 1. The officers of this Association shall be a President, three Vice-Presidents, a Secretary, a Treasurer, and thirteen Councilors.

Sec. 2. The officers, except the Councilors, shall be elected annually. The President shall appoint the first Councilors to serve one year, or until their successors are elected. The terms of the elected Councilors shall be for three years, those first elected serving one and two years, as may be arranged. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the annual session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon that annual session, and who has not been a member of the Association for the past two years.

Article X.—Reciprocity of Membership with Other State Societies.

In order to broaden professional fellowship this Association is ready to arrange with other State Medical Associations for an interchange of certificates of membership, so that members moving from one State to another may avoid the formality of re-election.

Article XI.—Funds and Expenses.

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall be fixed by the House of Delegates, but shall not exceed the sum of $2.00 per capita per annum, except on a four-fifths vote of the delegates present. Funds may also be raised by voluntary contributions, from the Association's publications, and in any other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the wel-

fare of the profession. All resolutions appropriating funds must be referred to the Finance Committee before action is taken thereon.

Article XII.—Referendum.

Section 1. A general meeting of the Association may, by a two-thirds vote of the members present, order a general referendum on any question pending before the House of Delegates, and when so ordered the House of Delegates shall submit such question to the members of the Association, who may vote by mail or in person, and, if the members voting shall comprise a majority of all the members of the Association, a majority of such vote shall determine the question and be binding on the House of Delegates

Sec. 2. The House of Delegates may, by a two-thirds vote of its own members, submit any question before it to a general referendum, as provided in the preceding section, and the result shall be binding on the House of Delegates.

Article XIII.—The Seal.

The Association shall have a common Seal, with power to break, change or renew the same at pleasure.

Article XIV.—Amendments.

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates present at any annual session, provided that such amendment shall have been presented in open meeting at the previous annual session, and that it shall have been published twice during the year in the bulletin or journal of this Association, or sent officially to each component society at least two months before the meeting at which final action is to be taken.

BY-LAWS.

Chapter I.—Membership.

Section 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be *prima facie* evidence of membership in this Association.

Sec. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

Sec. 3. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified, by reference to the roster of his society, he shall receive a badge, which shall be evidence of his right to all the privileges of membership at that session. No member shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

Chapter II.—Annual and Special Sessions of the Association.

Section 1. The Association shall hold an annual session at such time and place as has been fixed at the preceding annual session by the House of Delegates.

Sec. 2. Special meetings of either the Association or of the House of Delegates shall be called by the President on petition of twenty delegates or fifty members.

Chapter III.—General Meetings.

Section 1. All registered members may attend and participate in the proceedings and discussions of the general meetings and of the sections. The general meetings shall be presided over by the President or by one of the Vice-Presidents, and before them shall be delivered the address of the President and the orations.

Sec. 2. The general meeting may recommend to the House of Delegates the appointment of committees or commissions for scientific investigation of special interest and importance to the profession and public.

Chapter IV.—House of Delegates.

Section 1. The House of Delegates shall meet at 2 p. m. on the day fixed as the first day of the annual session. It may adjourn from time to time as may be necessary to complete its business, provided that its hours shall conflict as little as possible with the general meetings. The order of business shall be arranged as a separate section of the program.

Sec. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every 100 members, and one for each major fraction thereof, but each component society which has made its annual report and paid its assessment as provided in this Constitution and By-Laws, shall be entitled to one delegate.

Sec. 3. Twenty delegates shall constitute a quorum.

Sec. 4. It shall, through its officers, Council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each annual session a stepping stone to future ones of higher interest.

Sec. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public-health legislation, and to diffuse popular information in relation thereto.

Sec. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the same localty, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 7. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the results utilized and intelligently discussed in the county societies.

Sec. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body.

Sec. 9. It shall, upon application, provide and issue charters to county societies organized to conform to the spirit of this Constitution and By-Laws.

Sec. 10. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies to be designated by hyphenating the names of two or more counties so as to distinguish them from district or other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized seperately.

Sec. 11. It shall divide the State into Councilor Districts, specifying what counties each district shall include, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies, and no others, shall be members in such district societies. When so organized, from the presidents of such district societies shall be chosen the Vice-Presidents of this Association, and the presidents of the county societies of the district shall be the vice-presidents of such district societies.

Sec. 12. It shall have authority to appoint committees for

special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates, and may be present and participate in the debate on their reports.

Sec. 13. It shall approve all memorials and resolutions issued in the name of the Association before the same shall become effective.

Chapter. V.—Election of Officers.

Section 1. All elections shall be by ballot, and a majority of the votes cast shall be necessary to elect.

Sec. 2. The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the morning of the last day of the general session.

Sec. 3. Any person known to have solicited votes for or sought any office within the gift of this Association shall be ineligible for any office for two years.

Chapter VI.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for; he shall deliver an annual address at such time as may be arranged, and perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The Vice-Presidents shall assist the President in the discharge of his duties. In the event of the President's death, resignation or removal, the Council shall select one of the Vice-Presidents to succeed him.

Sec. 3. The Treasurer shall give bond in the sum of $1,500. He shall demand and receive all funds due the Association, together with the bequests and donations. He shall pay money out

of the Treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands.

Sec. 4. The Secretary shall attend the general meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be *ex officio* Secretary of the Council. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the annual sessions. He shall, with the co-operation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the House of Delegates, and shall make an annual report to the House of Delegates. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment, collect the same, and at once turn it over to the Treasurer. Acting with the Committee on Scientific Work, he shall prepare and issue all programs. The amount of his salary shall be fixed by the House of Delegates.

Chapter VII.—Council.

Section 1. The council shall meet on the day preceding the annual session, and daily during the session, and at such other

times as necessity may require, subject to the call of the chairman, or on petition of three Councilors. It shall meet on the last day of the annual session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and a clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

Sec. 2. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit the counties in his district at least once a year for the purpose of organizing component societies where none exists; for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his work and of the condition of the profession of each county in his district at the annual session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates on a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

Sec. 3. The Council shall be the board of censors of the Association. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates of the general meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final.

Sec. 4. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Sec. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Asssociation, and shall have authority to appoint an editor and such assistants as it deems necessary. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Association. As the Finance Committee it shall annually audit the accounts of the Treasurer and Secretary and other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of the vacancy in the office of the Secretary, or the Treasurer, the Council shall fill the vacancy until the next annual election.

Chapter VIII.—Committees.

Section 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Arrangement, and such other committees as may be necessary. Such committees shall be elected by the House of Delegates unless otherwise provided.

Sec. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be one, and shall determine the character and scope of the scientific proceedings of the Association for each session, subject to the instructions of the House of Delegates. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented.

Sec. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine. It shall keep in touch

with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs and elections.

Sec. 4. The Committee of Arrangements shall be appointed by the component society in which the annual session is to be held. It shall provide suitable accommodations for the meeting-places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary for publication in the program, and shall make additional announcements during the session as occasion may require.

Chapter IX.—County Societies.

Section 1. All county societies now in affiliation with this Association or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of this Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the Council or House of Delegates and shall be signed by the President and Secretary of this Association. The Council or the House of Delegates shall have authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the District if necessary, and all of the members brought into one organization. In case of failure to unite, an ap-

peal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county society shall judge of the qualification of its own members, but, as such societies are the only portals to this Association and to the American Medical Association, every reputable and legally registered physician who does not practice or claim to practice, nor lend his support to, any exclusive system of medicine, shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the Council, and its decision shall be final.

Sec. 7. In hearing appeals the Council may admit oral or written evidence as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a Board and as individual Councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

Sec. 9. A physician living on or near a couny line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

Sec. 10. Each component society shall have general direction of the affairs of the profession in its county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. At some meeting in advance of the annual session of this Association, each county society shall elect a delegate or delegates to represent it in the House of Delegates of this Association,

in the proportion of one delegate to each one hundred members or fraction thereof, and the Secretary of the society shall send a list of such delegates to the Secretary of this Association, at least ten days before the annual sessions.

Sec. 12. The Secretary of each component society shall keep a roster of its members and of the nonaffiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

Sec. 13. The Secretary of each component society shall forward its assessment, together with its roster of officers and members, list of delegates, and list of nonaffiliated physicians of the county to the Secretary of this Association each year thirty days before the annual session.

Sec. 14. Any county society which fails to pay its assessment, or make the report required ten days before the annual meeting, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House of Delegates until such requirements have been met.

Chapter X.—Miscellaneous.

Section 1. No address or paper before the Association, except those of the President and orators, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject except by unanimous consent, and those desiring to read papers must furnish the Secretary of the State Association a synopsis of such papers, of not less than fifty nor more than 150 words, at least thirty days before the annual meeting.

Sec. 2. All papers read before the Association or any of the

Sections shall become its property. Each paper shall be deposited with the Secretary when read.

Sec. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Roberts' Rules of Order, when not in conflict with this Constitution and By-Laws.

Sec. 4. The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

Chapter XI.—Amendments.

These By-Laws may be amended at any annual session by a majority vote of all the delegates present at that session, after the amendment has laid on the table for one day.

PRESIDENTS AND VICE-PRESIDENTS

OF THE

INDIANA STATE MEDICAL SOCIETY

SINCE ITS ORGANIZATION

PRESIDENTS.

Names.	*Residence.*	*Elected.*	*Served.*
*L. H. DUNLAP	Indianapolis	1849	1849
*W. T. S. CORNETT	Versailles	1849	1850
*A. CLAPP	New Albany	1850	1851
*GEO. W. MEARS	Indianapolis	1851	1852
*J. H. BROWNE	Lawrenceburg	1852	1853
*E. DEMING	Lafayette	1853	1854
*MADISON J. BRAY	Evansville	1854	1855
*WILLIAM LOMAX	Marion	1855	1856
*DANIEL MEEKER	Laporte	1856	1857
*T. BULLARD	Indianapolis	1857	1858
*NATHAN JOHNSON	Cambridge City	1858	1859
*DAVID HUTCHINSON	Mooresville	1859	1860
*B. S. WOODWORTH	Fort Wayne	1860	1861
*THEOPHILUS PARVIN	Indianapolis	1861	1862
*J. F. HIBBERD	Richmond	1862	1863
*JOHN SLOAN	New Albany	1863	1864
*S. M. LINTON	Columbus	1864	1864
*JOHN MOFFETT (acting president)	Rushville	1864	1864
*M. H. HARDING	Lawrenceburg	1865	1865
*W. LOCKHART (acting president)	Danville	1865	1866
*VEIRLING KERSEY	Richmond	1866	1867
*J. S. BOBBS	Indianapolis	1867	1868
*NATHANIEL FIELD	Jeffersonville	1868	1869
*GEO. SUTTON	Aurora	1869	1870
*R. N. TODD	Indianapolis	1870	1871

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
*H. P. AYRES	Fort Wayne	1871	1872
*JOEL PENNINGTON	Milton	1872	1873
*ISAAC CASSELBERRY	Evansville	1873	1874
*W. HOBBS	Knightstown	1873	1874
R. E. HAUGHTON	Richmond	1874	1875
*J. H. HELM	Peru	1875	1876
*S. S. BOYD	Dublin	1876	1877
L. D. WATERMAN	Indianapolis	1877	1878
L. HUMPHREYS	South Bend	1878	1879
*J. R. WEIST	Richmond	1879	1879
*BENJ. B. NEWLAND (acting president)	Bedford	1879	1880
*THOMAS B. HARVEY	Indianapolis	1880	1881
*MARSHALL SEXTON	Rushville	1881	1882
WM. H. BELL	Logansport	1882	1883
*S. E. MUNFORD	Princeton	1883	1884
*J. H. WOODBURN	Indianapolis	1884	1885
*J. S. GREGG	Fort Wayne	1885	1886
G. W. H. KEMPER	Muncie	1886	1887
*H. CHARLTON	Seymour	1887	1887
W. H. WISHARD	Indianapolis	1888	1889
J. D. GATCH	Lawrenceburg	1889	1890
*G. C. SMYTHE	Greencastle	1890	1891
EDWIN WALKER	Evansville	1891	1892
G. F. BEASLEY	Lafayette	1893	1894
C. A. DAUGHERTY	South Bend	1893	1894
*E. S. ELDER	Indianapolis	1894	1894
C. S. BOND (acting president)	Richmond	1894	1895
MILES F. PORTER	Fort Wayne	1895	1896
J. H. FORD	Wabash	1896	1897
W. N. WISHARD	Indianapolis	1897	1898
J. C. SEXTON	Rushville	1898	1899
WALKER SCHELL	Terre Haute	1899	1900
GEO. W. MCCASKEY	Fort Wayne	1900	1901
A. W. BRAYTON	Indianapolis	1901	1902
J. B. BERTELING	South Bend	1902	1903
JONAS STEWART	Anderson	1903	1904
GEO. T. MCCOY	Columbus	1904	1905
GEO. H. GRANT	Richmond	1905	

VICE-PRESIDENTS.

Names.	*Residence.*	*Elected.*	*Served.*
*N. JOHNSON (temporary)	Cambridge City	1849	1849
*L. RYAN (temporary)	Anderson	1849	1849
T. W. FLORER (temporary)	Alamo	1849	1849

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
*C. WALLACE (temporary)	Indianapolis	1849	1849
*A. CLAPP	New Albany	1849	1850
*N. JOHNSON	Cambridge City	1849	1850
*L. DUNLAP	Indianapolis	1849	1850
*DR. FARQUHER	Wabash	1849	1850
*WILLIAM LOMAX	Marion	1850	1851
*R. CURRAN	Indianapolis	1850	1851
*WILLIAM DAVIDSON	Madison	1850	1851
*W. W. HITT	Vincennes	1850	1851
*H. M. DOWLING	New Albany	1851	1852
*S. GRIMES	Delphi	1851	1852
*J. PENNINGTON	Milton	1851	1852
*CHARLES PARRY	Indianapolis	1851	1852
*WILLIAM BYFORD	Evansville	1852	1853
*WILLIAM DAVIDSON	Madison	1852	1853
*V. KERSEY	Milton	1852	1853
*T. BULLARD	Indianapolis	1852	1853
*N. JOHNSON	Cambridge City	1853	1854
*JAMES MCCLELLAND	Jeffersonville	1853	1854
*M. H. HARDING	Lawrenceburg	1853	1854
*SAMUEL REID	Salem	1853	1854
*O. L. CLARK	Lafayette	1854	1855
*P. S. SHIELDS	New Albany	1854	1855
*J. PENNINGTON	Milton	1854	1855
*J. F. MOTHERSHEAD	Indianapolis	1854	1855
*GEORGE SUTTON	Aurora	1855	1856
*G. B. WALKER	Evansville	1855	1856
*C. BOWMAN	New Albany	1855	1856
*D. MEEKER	Laporte	1855	1856
*JOHN SLOAN	New Albany	1856	1857
*W. W. HITT	Vincennes	1856	1857
T. W. FLORER	Alamo	1856	1857
*JOHN MOFFETT	Rushville	1856	1857
*T. J. COGLEY	Madison	1857	1858
*D. HUTCHINSON	Mooresville	1857	1858
*C. WEST	Hagerstown	1857	1858
*W. R. WINTON	Wabash	1857	1858
T. R. AUSTIN	New Albany	1858	1859
*BENJAMIN NEWLAND	Bedford	1858	1859
*S. W. FRY	Crawfordsville	1858	1859
*M. M. LATTA	Goshen	1858	1859
*JOHN SLOAN	New Albany	1859	1860
*R. M. O'FERRALL	Lafayette	1859	1860
*J. S. MCLELLAN	Jefferson City	1859	1860
R. E. HAUGHTON	Richmond	1859	1860

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
J. N. GREEN	Stilesville	1860	1861
*CHARLES FISHBACK	Shelbyville	1860	1861
L. HUMPHREY	South Bend	1860	1861
*ISAAC CASSELBERRY	Evansville	1860	1861
*CALVIN WEST	Hagerstown	1861	1862
*HENRY COX	Danville	1861	1862
A. H. ROBBINS	Rochester	1861	1862
J. A. SKINNER	Vincennes	1861	1862
*W. R. WINTON	Wabash	1862	1863
*H. G. SEXTON	Rushville	1862	1863
*A. PRESTON	Greencastle	1862	1863
*JOHN MOFFETT	Rushville	1862	1853
*A. G. PRESTON	Greencastle	1863	1864
*JOHN MOFFETT	Rushville	1863	1864
*BENJAMIN NEWLAND	Bedford	1863	1864
*CALVIN WEST	Hagerstown	1863	1864
*WILSON LOCKHART	Danville	1864	1865
*T. B. HARVEY	Indianapolis	1865	1866
*J. H. WOODBURN	Indianapolis	1866	1867
*R. B. JESSUP	Vincennes	1867	1868
*R. N. TODD	Indianapolis	1868	1869
*H. P. AYERS	Fort Wayne	1869	1870
I. M. ROSENTHAL	Fort Wayne	1870	1871
*J. K. BIGELOW	Indianapolis	1871	1872
R. E. HAUGHTON	Richmond	1872	1873
*WILSON HOBBS	Knightstown	1873	1874
*W. B. LYONS	Huntington	1874	1875
*F. W. BEARD	Vincennes	1875	1876
E. D. LAUGHLIN	Orleans	1876	1877
*N. P. HOWARD	Greenfield	1877	1878
*BENJ. NEWLAND	Bedford	1878	1879
J. D. GATCH	Lawrenceburg	1879	1880
JOHN D. MITCHELL	Terre Haute	1880	1881
F. J. VAN VORHIS	Indianapolis	1881	1882
*S. H. CHARLTON	Seymour	1882	1883
W. H. SCHULTZ	Lebanon	1883	1884
*J. S. GREGG	Fort Wayne	1884	1885
W. J. HURT	Waynetown	1885	1886
*W. V. WILES	Spencer	1886	1887
C. W. BURKET	Warsaw	1887	1888
*A. G. PORTER	Lebanon	1888	1889
SILAS T. YOUNT	Lafayette	1889	1890
H. D. WOOD	Angola	1890	1891
ERWIN WRIGHT	Huntington	1891	1892
C. H. SMITH	Lebanon	1892	1893

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
T. F. LEECH	Crawfordsville	1893	1894
C. S. BOND	Richmond	1894	1895
E. L. LARKINS	Terre Haute	1895	1896
W. F. BATMAN	Lebanon	1896	1897
JONAS STEWART	Anderson	1897	1898
GEO. F. KEIPER	Lafayette	1898	1899
SAMUEL KENNEDY	Shelbyville	1899	1900
A. M. HAYDEN	Evansville	1900	1901
J. B. BERTELING	South Bend	1901	1902
W. H. GILBERT	Evansville	1902	1903
CHAS. A. WHITE	Danville	1903	1904
I. N. TRENT	Muncie	1903	1904
M. G. MOORE	Vincennes	1903	1904
H. J. HALL	Franklin	1904	1905
C. T. HENDERSHOT	Cannelton	1904	1905
D. J. LORING	Valparaiso	1904	1905
D. W. STEVENSON	Richmond	1905	
HARRY C. SHARP	Jeffersonville	1905	
W. R. DAVIDSON	Evansville	1905	

LIST OF MEMBERS

OF THE

INDIANA STATE MEDICAL ASSOCIATION.

ADAMS COUNTY.

OFFICERS.

J. S. Boyers, President.
J. M. Miller, Vice-Pres.
P. B. Thomas, Sec.-Treas.

CENSORS.

H. F. Costello.
C. S. Clark.
W. W. P. McMillen.

MEMBERS.

Aspy, H. M., Geneva.
Beavers, Seth D., Decatur.
Boyers, James S., Decatur.
Clark, C. S., Decatur.
Clark, D. D., Decatur.
Coverdale, J. S., Decatur.
Coverdale, Earl G., Decatur.
Costello, H. F., Decatur.
Holloway, Marie L., Decatur.
Keller, H. E., Decatur.
Miller, James M., Decatur.
McMillen, W. W. P., Decatur.
Parrish, M. F., Monroe.
Thomas, P. B., Decatur.
Wilson, R. S., Berne.

FT. WAYNE (ALLEN COUNTY) MEDICAL SOCIETY.

OFFICERS.

L. P. Drayer, President.
M. J. Rosenthal, Vice-Pres.
J. C. Wallace, Secretary.
W. P. Whery, Treasurer.
B. Van Sweringen, Delegate.

CENSORS.

Mary A. Whery.
G. B. M. Bower.
K. K. Wheelock.

MEMBERS.

Adams, Horace E., Harlan.
Barnett, Chas. E., Ft. Wayne.
Barnett, W. W., Ft. Wayne.
Boyers, J. S., Decatur.
Beavers, S. D., Decatur.
Beall, Chas. G., Ft. Wayne.
Bell, E. Edwin, Ft. Wayne.
Bower, G. B. M., Ft. Wayne.
Brown, L. E., Ft. Wayne.
Brudi, G. G., New Haven.
Bruggeman, H. O., Ft. Wayne.
Buchman, A. P., Ft. Wayne.
Bulson, A. E., Jr., Ft. Wayne.
Calvin, J. Carrithers, Ft. Wayne.
Calvin, W. D., Ft. Wayne.
Carey, W. W., Ft. Wayne.
Crull, E. A., Ft. Wayne.
Dancer, Chas. R., Ft. Wayne.
Deming, N. L., Ft. Wayne.
Dinnen, Jas. M., Ft. Wayne.

Drayer, L. P., Ft. Wayne.
Duemling, H. A., Ft. Wayne.
English, C. H., Ft. Wayne.
Enslen, Wm. M., Ft. Wayne.
Geary, J. K., Ft. Wayne.
Gordon, C. W., Ft. Wayne.
Greenawalt, G. L., Ft. Wayne.
Griebel, Herman, Ft. Wayne.
Gross, W. O., Ft. Wayne.
Hammond, A. K., Ft. Wayne.
Havice, S. H., Ft. Wayne.
Hetrick, J., Ft. Wayne.
Kane, Alfred, Ft. Wayne.
Kesler, A. J., Ft. Wayne.
Macbeth, Harriet S., Ft. Wayne.
Macbeth, A. H., Ft. Wayne.
McCaskey, G. W., Ft. Wayne.
McEvoy, J. B., Ft. Wayne.
McHugh, J. E., Ft. Wayne.
McKeeman, R. B., Ft. Wayne.
McOscar, E. J., Ft. Wayne.
Mentzer, S. E., Monroeville.
Mercer, J. D., Poe.
Morgan, Elmer E., Ft. Wayne.
Myers, Wm. H., Ft. Wayne.
Nieschang, C. C. F., Ft. Wayne.
Null, L. S., New Haven.
Porter, Miles F., Ft. Wayne.
Price, C. R., Monroeville.
Proegler, Carl, Ft. Wayne.
Ranke, J. H., Ft. Wayne.
Rhamy, B. W., Ft. Wayne.
Rosenthal, I. M., Ft. Wayne.
Rosenthal, M. I., Ft. Wayne.
Ross, Geo. A., Ft. Wayne.
Ruhl, W D., Ft. Wayne.
Schilling, Carl, Ft. Wayne.
Schilling, Jno., Ft. Wayne.
Schneider A. L., Ft. Wayne.
Sledd, S. D., Ft. Wayne.
Stemen, C. B., Ft Wayne.
Stemen, G. B., Ft. Wayne.
Stultz, J. E., Ft. Wayne.
Sweringen, H. V., Ft. Wayne.
Sweringen, B. Van, Ft. Wayne.
Sweringen, G. Van, Ft. Wayne.
Van Buskirk, E. M., Ft. Wayne.
Wallace, J. Clifford, Ft. Wayne.
Weaver, B. P., Ft. Wayne.
Wheelock, K. K., Ft. Wayne.
Whery, Mary A., Ft. Wayne.
Whery, Wm. P., Ft. Wayne.
White, R. P., Ft. Wayne.
Williams, Alice B., Columbia City.
Williams, C. S., Columbia City.
Wybourn, D. C., Sheldon.

SUSPENDED.

Chambers, J. I., Ft. Wayne.
Greenwell, F., Huntertown.

REMOVED.

Hoffman, G. H., Ft. Wayne.
Hollingsworth, S. G., Harland.
Siver, E. L., Ft. Wayne.
Taylor, D. B., Ft. Wayne.
Thomas, Chas. E., Leesburg.

BARTHOLOMEW COUNTY.

OFFICERS.

E. U. Wood, President.
B. F. Armbruster, Vice-Pres.
J. W. Benham, Sec.-Treas.
Geo. O. Cosby, Delegate.

CENSORS.

E. U. Wood.
S. M. Voris.
R. E. Holder.

MEMBERS.

Arwine, John S., Columbus.
Armbruster, B. F., Columbus.
Banker, A. J., Columbus.
Banker, W. T., Columbus.
Butler, Wm. H., Columbus.
Benham, J. W., Columbus.
Clouse, Bertha A., Hope.
Cosby, Geo. O., Elizabethtown (R. F. D. 18.)
Elrod, M. N., Columbus.

Fitzpatrick, B., Columbus.
Francis, E. T., Columbus.
Holder, R. E., Columbus.
Hawes, James K., Clifford.
Kirkpatrick, A. M., Columbus.
Kamman, H. H., Columbus.
McCoy, Geo. T., Columbus.
Mennet, O. H., Columbus.
Marshall, D. J., Columbus.
Morris, John Little, Columbus.
Norton, F. D., Columbus, R. F. D.
Norton, Wm. J., Hope.
Regennas, E. G., Hope.
Roope, A. P., Columbus.
Suverkrup, Lotta R. A., Columbus.
Voris, S. M., Columbus.
Wisner, W. E., Columbus.
Wood, E. U., Columbus.

SUSPENDED.

Bice, L. C., Columbus.
De Long, O. A., Azalia.

BENTON COUNTY.

OFFICERS.

Clark Cook, President.
W. A. Smith, Vice-Pres.
Carl N. McCaslin, Sec.-Treas.
J. W. McMahan, Delegate.

CENSORS.

R. C. N. Cook.
H. G. Bloom.
J. W. McMahan.

MEMBERS.

Atkinson, Curtis, Oxford.
Bloom, H. G., Oxford.
Cook, Clark, Fowler.
Cook, R. C. N., Boswell.
Mavity, D. E, Fowler.
McCaslin, C. N., Earl Park.
McMahan, J. W., Earl Park.
Neighbor, A. G., Fowler.
Parker, E. E., Oxford.
Parkinson, W. M., Boswell.
Pratt, B. W., Goodland.
Smith, W. A., Otterbein.

SUSPENDED.

Allen, Chas. B., Fowler.
Eads, C. V., Ambia.
Fenton, S. C., Boswell.

BLACKFORD COUNTY.

OFFICERS.

C. R. Mason, President.
H. C. Davisson, Vice-Pres.
M. M. Clapper, Sec.-Treas.
M. M. Clapper, Delegate.

CENSORS.

M. M. Clapper.
C. W. Corey.
J. H. D. Lorimore.

MEMBERS.

Clapper, Manton M., Hartford City.
Corey, Chas. W., Hartford City.
Davisson, Henry C., Hartford City.
Hollis, Ella A., Hartford City.
Hollis, Samuel, Hartford City.
Hollis, William A., Hartford City.
Landon, Lewis C., Priam.
Lorimore, J. H. C., Hartford City.
Maddox, Leander E., Montpelier.
Mason, Charles R., Hartford City.
Reynolds, Francis M., Montpelier.
Scott, E. K., Hartford City.
Shull, Charles Q., Montpelier.
Sellers, Ch. A., Montpelier.
Sellers, John, Montpelier.

SUSPENDED.

Taylor, James A., Montpelier.
Thornton, Walter E., Montpelier.

BOONE COUNTY.

OFFICERS.

Mary M. Van Nuys, Pres.
D. F. Lee, Vice-Pres.
W. H. Williams, Secretary.
A. P. Fitch, Delegate.

CENSORS.

J. S. Shields.
C. D. Umberhine.
W. H. Schultz.

MEMBERS.

Brent, I. N., Jamestown.
Bonnell, T. A., Jamestown.
Brendel, John F., Zionsville.
Ball, J. R., Lebanon.
Engleman, L. P., Reese Mills.
Fitch, A. P., Lebanon.
Hardy, J. S., Lebanon.
Hurt, G. K., Thorntown.
Jones, A. B., Lebanon.
Little, P. B., Whitestown.
Lee, D. F., Zionsville.
Reagan, J. S., Lebanon.
Masters, Luella M., Thorntown.
Rose, M. H.,* Thorntown.
Roark, B. H., Jamestown.
Shields, J. S., Elizaville.
Schultz, Guy A., Lebanon.
Schultz, W. H., Lebanon.
Smith, C. H., Lebanon.
Smith, De L., Lebanon.
Umberhine, C. D., Reese Mills.
Van Nuys, Mary M., Lebanon.
Williams, W. H., Lebanon.

* Deceased.

CARROLL COUNTY.

OFFICERS.

W. F. Sharrer, President.
C. E. Angell, Vice-Pres.
Chas. C. Crampton, Sec.-Treas.
W. F. Sharrer, Delegate.

CENSORS.

Chas. E. Angell.

MEMBERS.

Angell, Chas. E., Delphi.
Carney, C. E., Delphi.
Crampton, Chas. C., Delphi.
Galbreth, W. H., Rocksfield.
Hickman, C. C., Yeoman.
Quick, W. R., Delphi.
Sharrer, W. F., Delphi.

CASS COUNTY.

OFFICERS.

Charles H. McCully, Pres.
John A. Little, Vice-Pres.
Geo. D. Miller, Sec.-Treas.
Chas. H. McCully, Delegate.

CENSORS.

John Bradfield.
John M. Pulliam.
John P. Hetherington.

MEMBERS.

Bell, Wm. H., Logansport.
Bartholomew, A. C., Logansport.
Barnfield, J. H., Logansport.
Bradfield, John, Logansport.
Cady, N. W., Logansport.
Elder, Edward C., Logansport.
Gilbert, J. W., Logansport.
Herrmann, A. J., Logansport.

Herrmann, F. J., Logansport.
Hallanan, Joseph, Logansport.
Hessler, Robert, Logansport.
Hetherington, J. P., Logansport.
Hall, Joseph, Logansport.
Hill, Henry B., Logansport.
Little, John A., Logansport.
Lybrook, Wm. E., Young America.
McCully, Charles H., Logansport.
Miller, Geo. D., Logansport.
Marshall, Geo. D., Young America.
Pulliam, John M., Logansport.
Parrish, Rebecca, Logansport.
Powell, Jehu Z., Logansport.
Rogers, Joseph G., Logansport.
Rubsam, Joseph, Logansport.
Reed J. H. Logansport.
Stevens, B. C., Logansport.
Stewart, J. W., Logansport.
Snyder, A. D., Miles, Washington.
Shultz, J. B., Logansport.
Thomas, Charles L., Logansport.
Tucker, Arthur W., Logansport.
Palmer, Adlebert L., Logansport.
Troutman, R. E., Logansport.
Terflinger, T. W., Logansport.
Busjahn, F. A., Logansport.
Holloway, W. A., Logansport.
Cornell, F., Galveston.
Miller, H. H., Galveston.
Mayfield, Marcellus, Royal Center.
Zinninger, Henry A., Lucerne.

CLARK COUNTY.

OFFICERS.

D. C. Peyton, President.
E. L. Elrod, Vice-President.
C. C. Crum, Sec.-Treas.
H. C. Sharp, Delegate.

CENSORS.

Wm. H. Sheets.
H. C. Sharp.
W. M. Varble.

MEMBERS.

Coombs, David, Charlestown.
Crum, Claude C., Jeffersonville.
Elrod, E. L., Henryville.
Field, D. L., Jeffersonville.
Flynn, Edw. N., Jeffersonville.
Graham, Oliver P., Jeffersonville.
Hancock, C. F. C., Jeffersonville.
Hobday, W. A., Ohio Falls.
Jones, Cadwalader, Charlestown.
McBride, Isaac, Jeffersonville.
Peyton, David C., Jeffersonville.
Ruddell, I. N., Jeffersonville.
Samuels, W. L., Winnemucca, Nev.
Sharp Harry C., Jeffersonville.
Sheets, Wm. H., Jeffersonville.
Stalker, Bodine, Borden.
Stockwell, John, Charlestown.
Varble, W. M., Jeffersonville.
Zuerner, Joseph, Jeffersonville.
Cohen, David, Jeffersonville.

REMOVED.

Leach, W. J., Sellersburg.

SUSPENDED.

Meloy, John, Sellersburg.
Reynolds, Jas. M., Memphis.
Wolfe, F. E., Jeffersonville.
Walker, Jas. H., Henryville.

CLAY COUNTY.

OFFICERS.

G. M. Pell, President.
Jas. M. Rowley, Vice-Pres.
Geo. W. Finley, Sec.
L. L. Williams, Treasurer.
G. W. Finley, Delegate.

CENSORS.

S. G. Hollingsworth.
W. H. Orr.
F. Nussel.

MEMBERS.

Black, Silas D., Brazil.
Dilly, Fred C., Brazil.
Finley, George W., Brazil.
Finch, Gilbert, Center Point.
Gifford, Joseph C., Brazil.
Hawkins, Robert W., Brazil.
Hollingsworth, S. G., Brazil.
James, Oliver, Cory.
Lewis, George F., Brazil.
Miller, Daniel B., Brazil.
Nussell, Fred, Brazil.
Pollom, Reginald, Cayuga.
Pell, Geo. M., Carbon.
Smith, Jacob F., Brazil.
Sourwine, John D., Brazil.
Veach, Patrick H., Staunton.
Rawley, James A., Brazil.
Howes, James W., Bowling Green.
Orr, Wm. H., Brazil.
Young, M. H., Harmony.
Williams, L L., Brazil.

SUSPENDED.

Mendenhall, Pleas. W., Asherville.
Lambert, Junius L., Brazil.

CLINTON COUNTY.

OFFICERS.

W. H. Curtiss, President.
Chas. Chittick, Vice-Pres.
M. T. McCarty, Sec.-Treas.

CENSORS.

S. B. Sims.
J. E. Robison.
W. J. Fernald.

MEMBERS.

Curtiss, W. H., Frankfort.
Chittick, Chas., Frankfort.
McCarty, M. T., Frankfort.
Alexander, W., Frankfort.
Fernald, W. J., Frankfort.
Sims, S. B., Frankfort.
Lambert, I. C., Colfax.
Hatfield, J. F., Moran.

SUSPENDED.

Gard, O., Frankfort.
Hammersley, W. L., Frankfort.
Hadley, Jas. W., Rossville.
Robison, J. E., Geetingsville.

CRAWFORD COUNTY.

OFFICERS.

F. R. Gobbel, President.
L. E. Grant, Vice-Pres.
G. H. Abell, Sec.-Treas.
L. E. Grant, Delegate.

CENSORS.

G. D. Hammon.
J. Meyers.
J. J. Johnson.

MEMBERS.

Gobbel, F. R., English.
Grant, L. E., Marengo.
Abell, G. H., Sulphur.
Johnson, J. J., Sulphur.
Hammond, G. D., English.
Meyers, J., Alton.
Bushaw, B. E., Marengo.
Hazzlewood, G. R., English.

SUSPENDED.

Walls, J. W., Eckerty.
Luckett, C. D., English.

DAVIESS COUNTY.

OFFICERS.

Geo. W. Willeford, President.
Henry Gers, Vice-Pres.
T. F. Spink, Sec.-Treas.
A. H. Faith, Delegate.

CENSORS.

C. H. Yenne.
Henry Herr.
A. H. Faith.

MEMBERS.

Anderson, J. W., Odon.
DeMotte, Jerome, Odon.
Donaldson, A. I., Washington.
Elrod, S. B., Raglesville.
Faith, Abraham H., Washington.
Gers, Henry, Washington.
Herr, Henry, Washington.
Holder, Union H., Washington.
Knapp, A. B., Washington.
Lett, Orris E., Glendale.
May, Vance, Washington.
Millis, E. D., Plainville.
McKittrick, Ora K., Plainville.
McPherson, S. L., Montgomery.
Parks, James F., Cumback.
Rankin, T. B., Odon.
Scudder, Chas. P., Washington.
Smoot, D. Brooks, Washington.
Spink, T. F., Washington.
Wall, Chas. T., Washington.
Willeford, Geo. W., Washington.
Yenne, C. H., Washington.

SUSPENDED.

Hollingsworth, Ernest, Wash'gton.
Tubbs, Geo. R., Alfordsville.

DEARBORN COUNTY.

OFFICERS.

D. E. Johnston, President.
John Elfers, Vice-Pres.
F. M. Mueller, Sec.-Treas.
H. H. Sutton, Delegate.

MEMBERS.

Bond, Marc L., Aurora.
Birchfield, J. W., New Alsace.
Cowen, Lewis C., Rising Sun.
Craig, T. E., Lawrenceburg.
Duncan, Wm. F., Manchester.
Elfers, John, Rising Sun.
Emmerl, E. J. Lawrenceburg.
Fagaly, A. T., Lawrenceburg.
Ford, O. P. M., Rising Sun.
Henry, W. C., Aurora.
Jaquith, O. S., Lawrenceburg.
Johnson, David E., Moores Hill.
Libbert, E. J., Aurora.
Ketcham, C. L., Guilford.
Long, H. P., Dillsboro.
Marshal, Coglie, Aurora.
Mueller, F. M., Lawrenceburg.
Newforth, C., Sunman.
Smith, Geo. F., Lawrenceburg.
Sutton, H. H., Aurora.
Treon, Jas. F., Aurora.
Holmes, Ella Sullivan, Aurora.
Bond, R. C.,* Aurora.

REMOVED.

Barclay, W. H., Farmers Retreat.

SUSPENDED.

Harryman, S. E., Lawrenceburg.

HONORARY.

Freeman, E. D., Osgood.

*Deceased.

DECATUR COUNTY.

OFFICERS.

J. M. Wood, President.
I. M. Sanders, Vice-Pres.
Chas. L. Williams, Sec.-Treas.
J. V. Schofield, Delegate.

CENSORS.

R. M. Thomas.
G. S. Crawford.

MEMBERS.

Alexander, J. H., Greensburg.
Burroughs, J. P., Westport.
Crawford, G. S., Milford.
Johnson, H., Newpoint.
Kercheval, C. F., Greensburg.
Sanders, I. M., Adams.
Schofield, J. V., Greensburg.
Thomas, R. M., Greensburg.
Thomas, W. E., Greensburg.
Tremain, M. A., Adams.
Welch, Jno. A., Letts.
Welch, O. F., Westport.
White, B. S., Greensburg.
Wood, J. M., Greensburg.
Williams, C. L., Greensburg.
Riley, J. H. S., Sardinia.

REMOVED.

Gephart, R. T., Burney.

SUSPENDED.

Essex, H. L., Alert.

DEKALB COUNTY.

OFFICERS.

A. J. Maris, President.
C. S. Stewart, Vice-Pres.
Frank Bevier, Secretary
John C. Baxter, Treasurer.

CENSORS.

F. M. Hines.
W. F. Shumaker.
W. W. Swarts.

MEMBERS.

Acker, M. M., Butler.
Baxter, J. C., Auburn.
Bevier, Frank, Waterloo.
Braughton, F. A., Waterloo.
Buchtel, I. O., Auburn.
Casebeer, J. B., Auburn.
Darby, A. B., Waterloo.
Hines, F. M., Auburn.
Maris, A. J., Waterloo.
Matheny, T. G., Auburn.
Nusbaum, W. H., Auburn.
Showalter, J. E., Waterloo.
Shumaker, W. F., Butler.
Swarts, Vesta M. W., Auburn.
Swarts, Willard W., Auburn.
Stewart, C. S., Auburn.
Swartz, D. J.,* Aubnrn.

SUSPENDED.

Sebring, D. A., Auburn.
Per Due, C. R., Auburn.
Norred, W. A., Auburn.

*Deceased.

DELAWARE COUNTY.

OFFICERS.

Lucius L. Ball, President.
Hugh A. Cowing, Vice-Pres.
U. G. Poland, Sec.-Treas.
G. W. Bucklin, Delegate.

CENSORS.

Hamilton P. Franks.
Wm. J. Molloy.
Geo. W. Bucklin.

MEMBERS.

Adams, B. O., Eaton.
Atkinson, J. M., Eaton.
Ball, L. L., Muncie.
Bell, J. N., New Burlington.
Bowles, H. S., Muncie.
Brandon, W. S., Daleville.
Bucklin, G. W., Muncie.
Burcham, H. C., Albany.
Barnard, P. C., Oakville.
Cecil, A. A., Muncie.
Cowing, H. A., Muncie.
Cooper, A. M., Muncie.
Dunn, W. H., Gaston.
Fair, H. D., Muncie.
Franks, H. P., Muncie.
Frazer, Chas., Muncie.
Good, A. H., Selma.
Green, G. R., Muncie.
Green, D. M., Muncie.
Hill, F. E., Muncie.
Jackson, F. G., Muncie.
Jump, S. G., Selma.
Kemper, A. T., Muncie.
Kemper, G. W. H., Muncie.
Kemper, W. W., Muncie.
Kilgore, Frank, Daleville.
Mann, E. B., Muncie.
Mansfield, T. J., Royerton.
Mix, C. M., Muncie.
Miller, C. E., Muncie.
Mitchell, W. P., Gaston.
Molloy, W. J., Muncie.
Owens, O. W., Muncie.
Poland, U. G., Muncie.
Rea, C. G, Muncie
Ried, S. M., Muncie.
Shaw, H. M., Gaston.
Smith, C. W., Selma.
Spickermon, H. R., Muncie.
Shively, A. H., Yorktown.
Stover, C. J., Eaton.
Spurgeon, O. E., Muncie.
Trent, I. N., Muncie.
Tindal, E. F., Muncie.
Vanderburg, J. M., Albany.
Vinton, A. E., Muncie.
Wadsworth, W. W., Muncie.
Winans, H. M., Muncie.
Wright, C. H., Yorktown.
Downing, J. F., Yorktown.
Downing, J. R., Yorktown.

REMOVED.

Norrel, J. W., Muncie.

DUBOIS COUNTY.

OFFICERS.

E. G. Lukemeyer, President.
L. B. Johnson, Vice-President.
C. R. Ramsbrok, Sec.-Treas.
L. C. Lukemeyer, Delegate.

CENSORS.

J. P. Salb.
Victor Knapp.
H. W. Stork.
A. G. Wollenmann.

MEMBERS.

Wollenmann, A. G., Ferdinand.
Lukemeyer, E. G., Huntingburg.
Lukemeyer, Louis, Huntingburg.
Kempf, G. J.,* Jasper.
Salb, J. P., Jasper.
Ramsbrok, C. R., Huntingburg.
Johnson, L. B., Ireland.
Knapp, Victor, Ferdinand.
Kelso, U. G., Dubois.
Seneff, J. H., Crystal.
Stark, H. W., Holland.
Knapp, H. C., Haysville.
Brannock, B. B., Jasper.
Casper, John, Jasper.
Sturm, E. A., Jasper.

SUSPENDED.

Whittingill, B. F., Ellsworth.

*Deceased.

ELKHART COUNTY.

OFFICERS.

I. W. Short, President.
J. A. Cook, Vice-Pres.
A. C. Yoder, Sec.-Treas.
E. E. Ash, Delegate.

CENSORS.

C. M. Eisenbeiss.
I. J. Becknell.
M. M. Eckleman.

MEMBERS.

Ash, E. E., Goshen.
Brothers, G. M., New Paris.
Becknell, I. J., Goshen.
Bareman, N. C., Wakarusa.
Cook, J. A., Goshen.
Dewey, F. N., Elkhart.
Dutrow, C. E., Bristol.
Eckelman, M. M., Elkhart.
Eckelman, F. C., Elkhart.
Eisenbeiss, C. M., Elkhart.
Edwards,, S. A., Goshen.
Farver, M. A., Middlebury.
Fisher, A. L., Elkhart.
Fleming, J. C., Elkhart.
Frink, C. W., Elkhart.
Goodrich, C. D., Elkhart.
Haggerty, R. I., Elkhart.
Hall, H. M., Millersburg.
Hoopingarner, G. B., Elkhart.
Hauenstein, G. W., Elkhart.
Ihrig, F. M., Goshen.
Kreider, W. B., Goshen.
Kreider, M. K., Goshen.
Knepple, La Mar, Wakarusa.
Kuhn, B. F., Elkhart.
Kistner, J. W., Elkhart.
Lockwood, R. S., Elkhart.
Lemon, H. K., Goshen.
Mumaw, H. A., Elkhart.
Miller, D. L., Goshen.
Murphy, R. M., Elkhart.
Neal, W. A., Elkhart.
Price, M. D., Nappanee.
Price, W. A., Nappanee.
Planck, E. A., Union, Michigan.
Rieman, Wm. H., Millersburg.
Sensenich, A. S., Wakarusa.
Short, I. W., Elkhart.
Snapp, J. A., Goshen.
Spohn, G. W., Elkhart.
Teters, B. F., Middlebury.
Thomas, W. H., Elkhart.
Washburne, G. F., Elkhart.
Work, J. A., Elkhart.
Walters, S. W., New Paris.
Whippy, Geo. A., Goshen.
Wagner, S. C, Wakarusa
Yoder, A. C., Goshen.
De Frees, H. J., Nappanee.
Hollingsworth, A. S., Goshen.
Inks, J. S., Nappanee.
Matthews, Jas., New Paris.
McCormick, R. S., Nappanee.
Stuckman, E. D., Nappanee.
Porter, J. B., Elkhart.
Whitmer, B. F., Goshen.

DENTISTS.

Adams, F. P., Elkhart.
Cummings, S. M., Elkhart.
Goebel, Wm., Elkhart.
Pounder, Malcolm, Elkhart.
Werner, J. F., Elkhart.
Vallette, W O., Goshen.
Zinn, G. E., Elkhart.

REMOVED.

Chase, C. S., North Webster.
Irwin, A. J., Port Huron, Mich.

FAYETTE COUNTY.

OFFICERS.

G. F. Van Pelt, President.
F. J. Spilman, Vice-Pres.
E. E. Hamilton, Sec.-Treas.

CENSORS.

L. D. Dillman.
L. V. Ludwick.
F. L. Mitchel.

MEMBERS.

Ambrose, U. C., Springersville.
Clark, J. H., Connersville.
Chitwood, Jno. E., Connersville.
Carlisle, P. G., East Connersville.
Dale, Omar E., Alquina.
Derbyshire, E., Connersville.
Dillman, Lurton D., Connersville.
Elliott, R. H., Connersville.
Gordin, S. E., Alquina.
Hamilton, S. N., Connersville.
Hamilton, E. Everett, Connersville.
Lamberson, H. M., Connersville.
Ludwick, L. V., Connersville.
Mountain, Joseph R., Connersville.
Mitchel, F. L., Everton.
Sipe, R. W., Orange.
Spilman, F. J., Connersville.
Van Pelt, Geo. F., Connersville.

FLOYD COUNTY.

OFFICERS.

H. S. Wolfe, President.
G. H. Cannon, Vice-Pres.
Austin Funk, Sec.-Treas.
C. W. McIntyre, Delegate.

CENSORS.

E. P. Easley.
W. L. Starr.
J. F. Weathers.

MEMBERS.

Bird, J. E., New Albany.
Cannon, G. H., New Albany.
Cook, C. P., New Albany.
Davis, C. P., Galena.
Davis, D. F., New Albany.
Easley, E. P., New Albany.
Funk, Austin, New Albany.
Funk, C. C., New Albany.
Garey, Dumont, New Albany.
Hazelwood, John, New Albany.
Hazelwood, F. W., New Albany.
Leach, W. J., New Albany.
Lemon, J. H., New Albany.
McKamy, Anna J., New Albany.
Mitchell, F. A., New Albany.
Moore, Wm., New Albany.
Neat, T. C., New Albany.
Richards, Wm. R., New Albany.
Rutherford, R. S., New Albany.
Shacklett, W. B., New Albany.
Sigmon, E. L., New Albany.
Starr, W. L., New Albany.
Tebault, W. P., New Albany.
Weathers, J. F., New Albany.
Wilcox, F. H., New Albany.
Winstandley, W. C., New Albany.
Wolfe, H. S., New Albany.
Wray, Jno. T., New Albany.
Maas, Alice M., New Albany.

REMOVED.

Knoefel, August, Linton.
Ralston, A. H., Fredericksburg.

FOUNTAIN COUNTY.

OFFICERS.

Marshall Petet, President.
Alva Spinning, Vice-Pres.
George Rowland, Sec.-Treas.
George Rowland, Delegate.

CENSORS.

C. L. Myers.
F. A. Shoaf.
W. H. Ross.

MEMBERS.

Armstrong, L. P.,* Newtown.
Bolling, Louis A., Attica.
Burlington, J. Roy, Attica.
Case, Marvin L., Attica.
Evans, John M., Mellott.
Finney, Charles J., Attica.
Henderson, J. T.,* Covington.
Holly, Albert C., Attica.
Kendall, Carey W., Pine Village.
Miller, G. W., Covington.
Mock, J. W., Covington.
Myers, C. L., Covington.
Pugh, F. H., Williamsport.
Rowland, George, Covington.
Rupert, A. M., Attica.
Spining, A. L., Covington.
Shoaf, F. A., Veedersburg.
Ludlow, Chas. H., Covington.
Ross, W. H., Veedersburg.
Pearlman, Samuel, Stone Bluff.
Petet, Marshall, Veedersburg.
Dinsmore, Walter H., Kramer.
Sparks, Joseph Tyndall, Yeddo.
Walter, F. J., Mudlavia.
Rice, John T., Attica.

*Deceased.

FRANKLIN COUNTY.

OFFICERS.

Irvin O. Allen, President.
J. W. MacCommon, Vice-Pres.
Calvin Carter, Sec.-Treas.
Calvin Carter, Delegate.

MEMBERS.

Allen, Irvin, O., Metamora.
Carter, Calvin, Brookville.
Gregory, Henry, Laurel.
MacCammon, Jno. W., Laurel.
Forry, Benj. F., Bath.
Preston, A. O., Fairfield.
Carter, Laura, Shelbyville.

SUSPENDED.

Linegar, Jno. M., Fairfield.

FULTON COUNTY.

OFFICERS.

Chas. J. Loring, President.
A. Brown, Vice-Pres.
G. E. Hoffman, Sec.-Treas.
J. M. Ward, Delegate.

MEMBERS.

Loring, C. J., Rochester.
Brown, Archibald, Rochester.
Hoffman, G. E., Rochester.
Ward, J. M., Kewanna.
Stinson, A. E., Athens.
Armstrong, Herman, Kewanna.
Slonaker, C. L., Leitersford.
Shafer, W. S., Rochester.
King, M. O., Rochester.
Gould, C. E., Rochester.
Johnston, A., Akron.
Runnells, J. Newton, Rochester.

SUSPENDED.

Armstrong, A., Kewaunee.
Carpender, W. C., Akron.
Hosman, W. E., Akron.

GIBSON COUNTY.

OFFICERS.

J. H. Clark, President.
M. P. Hollingsworth, Vice-P.
A. R. Burton, Sec.-Treas.

CENSORS.

Geo. Strickland.
J. W. McGowan.
Martin Montgomery.

MEMBERS.

Anderson, R. S., Princeton.
Alexander, H. H., Princeton.
Burton, A. R., Princeton.
Blair, W. W., Princeton.
Blair, Frank, Princeton.
Critchfield, J. S., Princeton.
Clark, J. H., Princeton.
Cushaman, R. A., Princeton.
Hollingsworth, M. P., Princeton.
Kendle, G. C., Princeton.
Morris, W. F., Fort Branch.
Morris, J. L., Kings.
McGowan, John W., Oakland City.
Mason, Geo. C., Oakland City.
Montgomery, J. R., Owensville
Montgomery, Martin, Owensville.
Maxam, F. H., Princeton.
Payne, F. M., Princeton.
Strickland, Geo., Francisco.
Swan, D. H., Francisco.
Ziliak, A. L., Francisco.
Zimmerman, J., Lynnville.
Marchand, V. H., Haubstadt.
Steincamp, E. T., Haubstadt.
Ziliak, J. E., Haubstadt.
Martin, C. A., Princeton.
Sanders, J. M., Princeton.

SUSPENDED.

Arthur, M. L., Patoka.
Clark, J. I., Owensville.

GRANT COUNTY.

OFFICERS.

W. A. Fankboner, President.
W. L. Wharton, Vice-Pres.
Burnham C. Dale, Secretary.
M. T. Shively, Treasurer.

CENSORS.

E. O. Harrold.
J. W. Patterson.
O. W. McGowan.

MEMBERS.

Barns, W. C., Marion.
Conley, L. H., Gas City.
Corey, L. J.,* Van Buren.
Crumrine, I. S. J., Landess.
Dale, B. C., Marion.
Dooley, A. J., Marion.
Daniels, G. W., Marion.
Daniels, Geo., Sweetser.
Fankboner, W. A., Marion.
Flynn, Wm., Marion.
Francis, W. R., Marion.
Harrold, E. O., Marion.
Hamilton, A. A., Marion.
Holliday, D. A., Fairmount.
Jeffries, H. S., Upland.
Johnson, J. E., Marion.
Kimball, T. C.,* Marion.
Matteson, D. E., Marion.
McKay, J. D., Marion.
McQuown, O. W., Marion.
Overman, C. J., Marion.
Patterson, J. W., Fairmount.
Shively, M. T., Marion.
Stout, O. L., Upland.
Trook, E. M., Marion.
Sweezey, Harry, Marion.
Whitson, E. M., Jonesboro.
Wharton, W. L., Matthews.
Knight, J. C., Jonesboro.
Lewis, M. J., Marion.

HONORARY.

Kimball, A. D.,* Nat. Mil. Home.
Williams, Lewis, Marion.

SUSPENDED.

Henley, A., Fairmount.
Cronkhite, C. C., Marion.

REMOVED.

Thompson, W. H., Matthews.

*Deceased.

GREENE COUNTY.

OFFICERS.

H. R. Lowder, President.
Sam. N. Quillen, Vice-Pres.
M. N. Thayer, Secretary.
L. A. Hyde, Treasurer.
W. R. Cravens, Delegate.

CENSORS.

E. T. Sherwood.
W. R. Cravens.
B. A. Rose.

MEMBERS.

Cravens, W. R., Bloomfield.
Cravens, E. R., Linton.
Cook, P. M., Solsberry.
Hyde, L. A., Linton.
Knocfel, A. F., Linton.
Mallett, C. D., Switz City.
Quillen, S. N., Linton.
Sherwood, B. M., Linton.
Sherwood, E. T., Linton.
Talbott, J. E., Linton.
Thayer, M. N., Linton.
Rose, B. A., Linton.
Aydelotte, Thos., Lyons.
Gray, Jno. W., Bloomfield.
Van Sandt, F. A., Bloomfield.
Lowder, H. R., Bloomfield.
Cole, W. H., Switz City.
Chambers, B. F., Lyons.

HAMILTON COUNTY.

OFFICERS.

J. B. Young, President.
F. C. Hershey, Vice-Pres.
E. E. Wishard, Sec.-Treas.
E. C. Loehr, Delegate.

MEMBERS.

Axline, J. A., Noblesville.
Baldwin, S. J., Hortonville.
Dove, S. C., Westfield.
Fodrea, Z. H., Westfield.
Graham, W. B., Noblesville.
Haworth, M. C., Noblesville.
Hershey, K. C., Carmel.
Hershey, F. C., Carmel.
Jones, Oscar, Jolietville.
Loehr, E. C., Noblesville.
Parr, J. N., Jolietville.
Ray, C. C., Arcadia.
Tomlinson, C. H., Cicero.
Hicks, J. L., Arcadia.
Tucker, F. A., Noblesville.
Tucker, A. R., Noblesville.
Wishard, E. E., Noblesville.
Young, J. B., Cicero.
Camp, W. E., Clarksville.

SUSPENDED.

Truitt, F. L., Noblesville.

HANCOCK COUNTY.

OFFICERS.

J. A. Comstock, President.
Wm. A. Justice, Vice-Pres.
J. E. Ferrell, Sec.-Treas.

CENSORS.

C. K. Bruner.
Warren R. King.
E. R. Sisson.

MEMBERS.

Barnes, C. A., Greenfield.
Bruner, C. K., Greenfield.
Bruner, Mary L., Greenfield.
Comstock, James A., Greenfield.
Gibbs, Charles Milo, Greenfield.
Ferrel, J. E., Eden.
Heller, Oscar, Greenfield.
Howard, Noble P., Greenfield.
Justice, Wm. A., Greenfield.
King, Warren R., Greenfield.
Larimore, J. M., Greenfield.
Selman, John W., Greenfield.
Selman, Frank W., Greenfield.
Sisson, Ernest R., Maxwell.
Slocum, Stewart, Fortville.
Cory, J. D., McCordsville.
Allen, J., Charlottsville.
Titus, Chas., Warrington.

HARRISON COUNTY.

OFFICERS.

Z. T. Funk, President.
P. H. Schoen, Vice-Pres.
J. C. Bottorff, Secretary.

MEMBERS.

Funk, Z. T., Corydon.
Bottorff, J. C., Corydon.
Neely, J. L., Corydon.
Schoen, P. H., New Middletown.
Wolfe, Z. C., Corydon.
Baxter, J. W., Lanesville.
Weaver, Amzi, Elizabeth.

SUSPENDED.

Daniel, William, Corydon.
Fetzer, J. E., Corydon.
Habermal, Clara L., Corydon.
Martin, G. F., Corydon.
Reader, W. H., New Amsterdam.
Winders, L. C., Elizabeth.
Wolfe, F. E., Lanesville.

HENDRICKS COUNTY.

OFFICERS.

W. J. Hoadley, President.
Ernest Cooper, Vice-Pres.
W. T. Lawson, Sec.-Treas.

CENSORS.

O. B. Johnson.
John A. Osborn.
Joel T. Barker.

MEMBERS.

Adams, Thomas J., North Salem.
Barker, Joel T., Danville.
Barker, Thomas R., Danville.
Carter, Amos, Plainfield.
Cooper, Ernest, Plainfield.
Davidson, A. W., Brownsburg.
Hicks, L. F., Stilesville.
Hoadley, W. J., Danville.
Hunt, Stephen, Coatsville.
Hunt, Tighlman, Plainfield.
Jessup, Maria Allen, Friendswood
Johnson, O. B., Lizton.
Lawson, W. T., Danville.
Marsh, John L.,Brownsburg.
McClintock, Chas. W., Pittsboro.
Osborn, John A., New Winchester.
Osborn, Harry S., Pittsboro.
O'Brien, Wm. M., Danville.
O'Brien, B. M., New Winchester.
Ragan, John S., Plainfield.
Reynolds, D. Monroe, Clayton.
Summers, H. C., Amo.
Smith, Thomas G., Brownsburg.
Terrell, W. H., Stilesville.
White, C. A., Danville.
Tarabee, C. E., Danville.

HONORARY.

Parker, M. G., Danville.

SUSPENDED.

Jones, Rilus E., Clayton.

HENRY COUNTY.

OFFICERS.

C. E. VanMatre, President.
H. H. Koons. Vice-President.
J. E. Hiatt, Sec.-Treas.
S. C. Waters, Delegate.

CENSORS.

H. Benedict.
E. T. Mendenhall.
E. S. Ferris.

MEMBERS.

Bartlett, C. G., Lewisville.
Benedict, H., Springport.
Boor, W. F., New Castle.
Blossom, J. C., Mt. Summit.
Butler, C. A., New Castle.
Crouse, Henry M., Knightstown.

Ferris, Edgar S., New Castle.
Greist, H. W., New Castle.
Gronendyke, T. W., New Castle.
Gronendyke, O. J., New Castle.
Holloway, O. E., Knightstown.
Hess, F. C., Cadiz.
Hardesty, J. C., New Castle.
Hiatt. J. E., New Castle.
Koons, H. H., New Lisbon.
Kirk, E. E., Spiceland.
Mendenhall, E. T., New Castle.
Post, B. O., Sulphur Springs.
Stuart, Robert, Spiceland.
Stoddard, J. M., Kennard.
Smith, Geo. H., Knightstown.
Thornburgh, F. L., Middletown.
VanMatre, C. E., New Castle.
Wilson, Ralph, Shirley.
Wallage, Geo. W., Middletown.
Waters, S. C., Middletown.
Tully, J. A., Millville.
Bailey, G. D., Spiceland.
Yockey, D. H.,* Blountsville.

REMOVED.

Andrews, George R., Muncie.

SUSPENDED.

McShirley, J. L., Sulphur Springs.
Summers, O. R., Middletown.

*Deceased.

HOWARD COUNTY.

OFFICERS.

J. O. Garr, President.
G. C. Maughmer, Vice-Pres.
S. R. Chancellor, Secretary.
L. A. Simmon, Treasurer.
H. C. Miller, Delegate.

CENSORS.

J. C. F. Thorne.
Edgar Cox.
J. H. Ross.

MEMBERS.

Cox, Edgar, Kokomo.
Chittick, Andrew, Burlington.
Chancellor, S. R., Kokomo.
Deweese, L., Hemlock.
Friermood, E. K., Greentown.
Garr, J. O., Kokomo.
Hamilton, N. C., Kokomo.
Harrison, W. H., Kokomo.
Martin, W. H., Kokomo.
McClurg, W. H., Kokomo.
Miller, L. C., Alto.
Maughmer, G. C., Kokomo.
Moore, Emma W., Kokomo.
Moulder, J. McL., Kokomo.
Miller, H. C., Greentown.
Miller, Earl, Kokomo.
Moore, J. B., Kokomo.
Powell, E. U., Greentown.
Peters, D. C., Greentown.
Martin, A. A., Ridgeway.
Ross, J. H., Kokomo.
Ross, R. H., Cassville.
Scott, R. F., Kokomo.
Scott, W. I., Kokomo.
Simmon, L. A., Kokomo.
Thorne, J. C. F., Kokomo.
Varner, R. D., Kokomo.
Wright, J. W., Kokomo.
Puckett, J. L., Kokomo.

HONORARY.

Kern, L., Kokomo.

REMOVED.

Knepple, Lamar, Kokomo.

SUSPENDED.

Smith, R. H., Kokomo.
Ware, C. M., Greentown.

HUNTINGTON COUNTY.

OFFICERS.

Emil T. Dippell, President.
Ervin Wright, Sec.-Treas.
Chas. L. Wright, Delegate.

CENSORS.

A. H. Shaffer.
Fred W. Grayston.
F. B. Morgan.

MEMBERS.

Chafee, Wm. C., Huntington.
Dippell, Emil T., Huntington.
Fisher, E. S., Markle.
Fry, Chas. W., Huntington.
Frost, R. F., Huntington.
Grayston, B. W. B., Huntington.
Grayston, Chas. E., Huntington.
Grayston, Fred W., Huntington.
Good, Chas. H., Warren.
Hunter, Jno. R., Huntington.
Hicks, Jas. M., Huntington.
Kemp, Jos. W., Roanoke
Morgan, F. B., Huntington.
McIlvain, H. K., Huntington.
Nickols, Wm. E., Andrews.
Northrup, A. H., Markle.
Scott, N. W., Huntington.
Shaffer, A. H., Huntington.
Wright, Ervin, Huntington.
Wright, Chas. L., Huntington.
Wilking, S. V., Roanoke.

JACKSON COUNTY.

OFFICERS.

Fred Heller, President.
A. G. Osterman, Vice-Pres.
G. H. Kamman, Sec.-Treas.
J. K. Ritter, Delegate.

CENSORS.

J. K. Ritter.
M. F. Gerrish.
A. May.

MEMBERS.

Barnes, G. O., Seymour.
Cummings, D. J., Sr., Ewing.
Cummings, D. J., Jr., Ewing.
Cummings, H. A.,* Mooney.
Gerrish, M. F., Seymour.
Gillespie, C. E., Crothersville.
Harrod, N., Tampico.
Heller, F., Brownstown.
Hill, L. B., Seymour.
Jenkins, J. M., Cortland.
Kamman, G. H., Seymour.
May, A., Crothersville.
Osterman, A. G., Dudleytown.
Ritter, J. K., Seymour.
Ruddick, L., Seymour.
Shields, J. M., Seymour.
Washburn, H. A., Freetown.
Graessle, G. G., Seymour.

REMOVED.

Pettigrew, C. D., Flat Rock.

*Deceased.

JAY COUNTY.

OFFICERS.

C. A. Paddock, President.
C. E. Caylor, Vice-Pres.
J. E. Nixon, Sec.-Treas.

CENSORS.

C. W. Mackey.
F. E. Moyer.
J. T. Dickes.

MEMBERS.

Murray, D. P., Dunkirk.
Garber, J. B., Dunkirk.
Moyer, F. E., Pennville.
Mason, Samuel, Pennville.
Caylor, C. E., Pennville.
Brokaw, R. E., Portland.
Walker, W. H., Portland.
Schwartz, W. D., Portland.
Wiley, Harlet, Portland.
Sims, I. G., Portland.
Paddock, C. A., Portland.
Perry, G. L., Portland.
Dickes, J. T., Portland.
Mackey, C. W., Portland.
Jay, M. T., Portland.
Hall, J. W., Portland.
Shepherd, G. W., Redkey.
Mills, C. C., Redkey.
Nixon, J. E., New Mt. Pleasant.

JEFFERSON COUNTY.

OFFICERS.

J. H. Christie, Delegate.
Nathan P. Graham, Vice-P.
J. Cooperider, Sec.-Treas.
J. H. Christie, Delegate.

CENSORS.

Wm. R. Mathews.
George E. Denny.
R. W. Cochran.

MEMBERS.

Austin, Fred H., North Madison.
Calvert, J. H., Milton, Ky.
Childs, A. G. W., Madison.
Christie, James H., Canaan.
Cochran, R. W., Madison.
Cooperider, J., Madison.
Copeland, Charles C., N. Madison.
Denny, George E., Madison.
Denny, Charles, Belleview.
Graham, Nathan P., Madison.
Hampton, S. E., Milton, Ky.
Kremer, Nicholas A., Madison.
Lewis, George C., Madison.
Mathews, Wm. R., China.
Rawlings, J. V., Wirt.
Ryker, Charles, Manville.
Shepherd, Vincent, Dupont.
Whitsett, S. A., Kent.
McKeand, Robert, Chelsea.

SUSPENDED.

Copeland, R. M., Bennington.
McCarty, W. W., Canaan.
Morse, Gertrude, Madison.

REMOVED.

Giltner, Harry A., Mathews.

JENNINGS COUNTY.

OFFICERS.

F. A. Martin, President.
W. H. Fuller, Vice-Pres.
W. H. Stemm, Sec.-Treas.
J. H. Green, Delegate.

CENSORS.

W. H. Richardson.
D. R. Saunders.

MEMBERS.

Adams, S. D., Brewersville.
Cronch, J. H., N. Vernon.
Davenport, H. F., Hayden.
Case, W. W., Zenas.
Fuller, W. H., North Vernon.
Gaddy, O., Paris Crossing.
Green, J. H., No. Vernon.
Love, J. R., Zenas.
Martin, F. A., Commiskey.
McClure, J. W., Butlerville.
Mitchell, W. J., No. Vernon.
Richardson, W. H., Vernon.
Redman, L. H., Scipio.
Stemm, W. H., No. Vernon.
Saunders, D. R., No. Vernon.
Wildman, W. A., San Jacinto.
Wilson, W. L., Scipio.
Shotts, H. R., Nebraska.

SUSPENDED.

Robertson, D. W., Deputy.

JOHNSON COUNTY.

OFFICERS.

R. W. Terhune, President.
Z. Carns, Vice-Pres.
J. H. Lanam, Sec.-Treas.
L. L. Whitesides, Delegate.

CENSORS.

D. L. Phipps.
R. D. Willan.
L. L. Whitesides.

MEMBERS.

Carnes, Z., Greenwood.
Craig, J. A., Greenwood.
Hall, H. J., Franklin.
Lanam, J. H., Franklin.
Phipps, D. L., Whiteland.
Terhune, R. W., Whiteland.
Wallace, B., Franklin.
Whitesides, L. L., Franklin.
Willan, R. Day, Trafalgar.
Wishard, J. M.,* Greenwood.

*Deceased.

KNOX COUNTY.

OFFICERS.

S. C. Beard, President.
T. M. Staley, Vice-Pres.
J. D. McDowell, Secretary.
M. G. Moore, Delegate.

CENSORS.

William Davenport.
P. H. Caney.
Royse Davis.

MEMBERS.

Ramsey, J. P., Vincennes.
Knapp, George, Vincennes.
Hall, Silas, Vincennes.
Maxedon, Thomas H., Vincennes.
Somes, Joseph F., Vincennes.
Buley, David M., Vincennes.
McDowell, M. M., Vincennes.
Davenport, Wm. H., Vincennes.
Held, Henry W., Vincennes.
Smadel, Joseph W., Vincennes.
Beckes, Norman E., Vincennes.
Caney, P. H., Vincennes.
Moore, Maurice G., Vincennes.
Benham, Charles W., Vincennes.

McDowell, James D., Vincennes.
Stewart, C. E., Vincennes.
Beard, Schuyler C., Vincennes.
Downey, L. J., Vincennes.
McCoy, James N., Vincennes.
Boyd, C. L., Vincennes.
Staley, L. B., Bicknell.
Staley, Thomas M., Bicknell.
Amy, W. E., Bicknell.
Reeve, Joseph L., Edwardsport.
Davis, Royce, Decker.
Hoover, L., Decker.
Johnston, M. A., Oaktown.
Grim, G. B., Oaktown.
Swartzel, Joseph A., Indianapolis.
McDowell, L. C., Freelandsville.
Fox, R. H., Freelandsville.
Beckes, L. M.,* Vincennes.
Kessinger, Ellis,* Sanborn.
McGauhey, A. J.,* Linton.

HONORARY.

Smith, Hubbard M., Vincennes.

SUSPENDED.

Listman, S. J., Oaktown.

REMOVED.

Chambers, B. F., Lyons.

*Deceased.

KOSCIUSKO COUNTY.

OFFICERS.

Chas. R. Long, President.
W. S. Leiter, Vice-Pres.
I. B. Webber, Sec.-Treas.
I. B. Webber, Delegate.

CENSORS.

C. E. Leedy.
C. W. Burket.
P. G. Fermier.

MEMBERS.

Amiss, J. M., Silver Lake.
Bash, J. M., Warsaw.
Burket, C. W., Warsaw.
Fermier, P. G., Leesburg.
Hines, W. L., Warsaw.
Ketchum, Geo. V., Portland, Ore.
King, H. O., Kendalville.
Lecrone, Ira, Silver Lake.
Leedy, C. E., Pierceton.
Leiter, W. S., Claypool.
Long, Chas. R., Pierceton.
Lyons, J. H., North Webster.
McDonald, A. C., Warsaw.
Nehrbas, J. G., Winona Lake.
Potter, J. E., Milford.
Schoonover, Wm. R., Warsaw.
Shackelford, T. J., Warsaw.
Thomas, Chas. E., Leesburg.
Webber, I. B., Warsaw.

SUSPENDED.

Johnson, A. R., Michigan City.

REMOVED.

Defrees, H. J., Nappanee.

LAGRANGE COUNTY.

OFFICERS.

H. W. Schrock, President.
A. J. Hostetler, Vice-Pres.
Dwight W. Dryer, Sec.-Treas.
F. C. Wade, Delegate.

CENSORS.

A. R. Wyatt.
Wm. H. Short.
A. G. Grubb.

MEMBERS.

Broughton, F. H., Wolcottville.
Dancer, Chas. W., Stroh.
Dryer, D. W., Lagrange.
Eash, S. M., Shipshewana.
Ferguson, W. A., Brighton.
Foster, John H., Wolcottville.
Grubb, A. G., Mongo.
Hostetler, A. J., Shipshewana.
Newnam, H. M., South Milford.
Schrock, H. W., Lagrange.
Schrock, J. J., Emma.
Schrock, O. L., Lagrange.
Short, Wm. H., Lagrange.
Short, Jno. L., Lagrange.
Vaughan, I. J., Topeka.
Wade, F. C., Lima.
Wyatt, A. R., Lagrange.
Youngkin, J. W., Wolcotville.

LAKE COUNTY.

OFFICERS.

W. F. Howat, President.
J. C. Gibbs, Vice-Pres.
H. E. Sharrer, Sec.-Treas.
A. J. Willets, Delegate.

CENSORS.

C. W. Campbell.
H. E. Sharrer.
E. M. Shanklin.

MEMBERS.

Brannon, G. D., Crown Point.
Button, O. E., Crown Point.
Buchanan, W. A., Hammond.
Clark, J. T., Hammond.
Campbell, Cyrus W., Hammond.
Dewey, E. L., Hammond.
Faulkner, Clara, Hobart.
Gibbs, J. C., Crown Point.
Gordon, E. R., Hobart.
Howat, W. F., Hammond.
Hoskins, G. H., Whiting.
Hughes, W. L., Indiana Harbor.
Kelly, L. H., Hammond.
Kohr, T. W., Hammond.
Mackey, R. C., Hobart.
Pannenborg, J. C., Hammond.
Ross, Alex. A., East Chicago.
Robinson, C. C., Ind. Harbor.
Shanklin, E. M., Hammond.
Sauer, Fred'k W., Indiana Harbor.
Stauffer, Edwin R., Hammond.
Schwartz, W. P., Crown Point.
Schlicker, H. G., East Chicago.
Vaughn, Martin, Hammond.
Weis, W. D., Hammond.
Watson, J. C., Hobart.
Willetts, A. J., Lowell.
Oberlin, T. W. Hammond.
Scull, Eleanor, Hammond.
Sharrer, H. E., Hammond.
Ainsley, Robert, Indiana Harbor.
Putnam, W. E., Whiting.
Lauer, A. J., Whiting.
Teegarden, J. A., Indiana Harbor.

SUSPENDED.

Spear, Robert, East Chicago.

REMOVED.

Turner, S. R., Hammond.

LAPORTE COUNTY.

OFFICERS.

F. T. Wilcox, President.
Whitefield Bowers, Vice-Pres.
F. A. McGrew, Secretary.
F. R. Warren, Treasurer.
E. G. Blinks, Delegate.

CENSORS.

H. W. Wilson.
B. C. Bowell.
J. L. Gray.

MEMBERS.

Annis, E. L., Laporte.
Bacon, V. V., Michigan City.
Bowell, B. Carr, Laporte.
Bowers, Whitefield, Michigan City.
Blinks, E. G., Michigan City.
Campbell, H. M., Westville.
Drescher, Marie L., Michigan City.
Eberhardt, W., Michigan City.
Gray, J. L., Laporte.
Hollenbeck, B. W., Westville.
Kerrigan, J. J., Michigan City.
Ledbetter, J. M., Michigan City.
Long, H. H., Kingsbury.
Martin, J. S., Rolling Prairie.
Martin, F. V., Michigan City.
Martin, H. H., Laporte.
Meyer, J. H. Wm., Laporte.
McGrew, F. A., Laporte.
Rogers, J. B., Michigan City.
Scobey, A. W., Kankakee, Ill.
Smith, M. S., Laporte.
Sutherland, O. L., Laporte.
Tillotson, A. G., Michigan City.
Wardner, Horace,* Laporte.
Warren, F. R., Michigan City.
Wilcox, F. T., Laporte.
Wilson, H. W., Michigan City.
Wilson, L. A., Kingsbury.
Milligan, J. W., Michigan City.
Crawford, E. F. W., Hanna.
Ivey, D. R., LaCrosse.

HONORARY.

Andrew, Geo. L., Chicago, Ill.
Darling, N. S., Laporte.

*Deceased.

LAWRENCE COUNTY.

OFFICERS.

John R. Pearson, President.
John R. Andrews, Secretary.

CENSORS.

C. H. Emery.
Richard B. Short.
W. H. Smith.

MEMBERS.

McFarlan, Jno. T., Williams.
Walls, G. W., Mitchell.
Gibbons, J. A., Mitchell.
Byrns, James D., Mitchell.
Duncan, J. B., Bedford.
Rariden, C. E., Bedford.
McDonald, A. J., Bedford.
Short, R. B., Bedford.
Emery, Charles H., Bedford.
Freeland, John T., Bedford.
Stipp, F. E., Bedford.
Hunter, F. S., Bedford.
Smith, W. H., Bedford.
Pearson, J. R., Bedford.
Voyles, H., Bedford.
Mitchell, E. E., Avoca.
Sherwood, W. C., Mitchell.
Smith, S. W., Leesville.
Bullitt Thomas W., River Vale.
Andrews, J. R., River Vale.
Perkins, E. L., Oolitic.
Gibbons, G. L., Huron.
Dings, W. H., Mitchell.
Kelly, J. C., Mitchell.
Dierking, A. W., Oolitic.
Woolery, P., Heltonville.
Hornocker, S. D., Silverville.
Jackson, Cloud M., Springville.
Donica, T. M., Tunnelton.
Bare, A. W., Bryantsville.

MADISON COUNTY.

OFFICERS.

Etta Charles, President.
E. V. Boram, Vice-Pres.
Lee F. Hunt, Sec.-Treas.
Jonas Stewart, Delegate.

CENSORS.

J. W. Cook.
O. E. McWilliams.
Chas. Trueblood.

MEMBERS.

Alexander, L. E., Pendleton.
Austin, M. A., Anderson.
Armington, J. C., Anderson.
Armfield, T. O., Elwood.
Brownback, O. W., Pendleton.
Boram, E. V., Anderson.
Boyden, W. A., Anderson.
Cook, J. W., Pendleton.
Cook, B. H., Anderson.
Collins, A. W., Anderson.
Conrad, E. M., Anderson.
Conway, C. E., Perkinsville.
Druley, O. E., Anderson.
Eshelman, W. A., Anderson.
Fattic, J. B., Anderson.
Fairfield, W. J., Anderson.
Garretson, W. M., Perkinsville.
Harter, W. P., Anderson.
Harter, J. H., Anderson.
Hunt, Lee F., Anderson.
Hunt, J. W.,* Anderson.
Hall, J. E., Alexandria.
Jones, H. E., Anderson.
Jones, T. M., Anderson.
Kellar, F. G., Alexandria.
Kneale, W. W., Anderson.
Longanecker, E. W., Anderson.
Long, A. J., Anderson.
McWilliams, O. E., Anderson.
Miley, I., Anderson.
Marshall, R. E., Elwood.
Newlin, S. C., Anderson.
Norris, S. C., Anderson.
Otto, A. E., Alexandria.
Perce, B. H., Anderson.
Runyan, C. P., Elwood.
Rush, M. A., Anderson.
Stewart, Jonas, Anderson.
Suttner, C. N., Walla Walla, Wash.
Stephenson, T. J., Lapel.
Terrill, L. B., Anderson.
Tobias, A. W., Elwood.
Trueblood, Charles, Anderson.
Ulmer, D. R., Alexandria.
Whitledge, G. A., Anderson.
Williams, L. O., Anderson.
Williams, Charles, Anderson.
Walser, J. A., Anderson.
Wood, N. S., Anderson.
Chittenden, E. W., Anderson.
Covertson, J. W., Frankton.
Charles, Etta, Summitville.
Cullipher, J. E., Pendleton.

SUSPENDED.

Chittenden, G. F., Anderson.
Diven, C. E., Anderson.
Fisher, J. M., Lapel.
Gibson, J. J., Alexandria.
Horne, W. N., Anderson.
Nourse, F. P., Alexandria.
Ploughe, M. L., Elwood.
Wright, C. R., Frankton.

*Deceased.

INDIANAPOLIS (MARION COUNTY) MEDICAL SOCIETY.

OFFICERS.

Frederic C. Heath, President.
Chas. E. Ferguson, Vice-Pres.
Theodore Potter, Secretary.
J. T. Scott, Treasurer.

CENSORS.

L. H. Dunning.
F. B. Wynn.
A. W. Brayton.
A. L. Wilson.
L. C. Cline.
Thos. B. Eastman.

MEMBERS.

Amos, Edw. M., 3304 N. Illinois.
Allen, Wesley, West Newton.
Allen, Horace R., 1320 N. Del.
Anthony, James R., 1607 College.
Alexander, Joseph C., 219 N. Claypool Bldg.
Andrew, V. E., 1443 N. New Jersey.
Bahr, Max A., Central Insane Hospital.
Brill, James H., 608 N. New Jersey.
Barnes, Arthur L., Southport.
Barnhill, John F., 323 N. Delaware.
Bates, J. M., Broad Ripple.
Beck, Herman A., 18 W. Market.
Beck, Wm. S., 18 W. Market.
Berner, Louis E., 949 Prospect.
Bell, Guido, 431 E. Ohio.
Berauer, J. M., 1353 Madison.
Brayton, A. W., 330 N. Claypool Bldg.
Brayton, Nelson D., 330 N. Claypool Bldg.
Brown, Benj. A., 3712 E. 25th.
Burckhardt, Louis, 33 Willoughby Bldg.
Ballard, Joseph, 1330 Roosevelt.
Bower, John V., Millersville.
Boersig, Joseph A., 1214 Reisner.
Brown, Ed. A., 1066 Virginia.
Bird, Chas. R., 2128 Central.
Bretz, Arthur G., 1623 N. Capitol.
Christian, Wilmer, 532 N. Claypool Bldg.
Canfield, Benton V., 207 E. New York.
Conger, Chas. W., 865 Mass. ave.
Carson, L. O., Trader's Point.
Charlton, F. R., 23 Willoughby Bldg.
Clevenger, Wm. F., 229 N. Penn.
Cline, Lewis C., 20 Willoughby Bldg.
Cole, A. M., 401 N. Claypool Bldg.
Cook, Chas. J., 598 N. Keystone.
Cook, George J., 28 Willoughby Bldg.
Cottingham, Chas. E., 216 Newton Claypool Bldg.
Crose, Samuel E., 219 W. Wash.
Cain, Joseph D., 1518 E. Wash.
Courtney, Thomas E., 533 E. South.
Clark, Edmund D., 407 N. Claypool Bldg.
Cunningham, S. R., 53 Willoughby Bldg.
Chamberlin, Cameron, 3307 E. 10th.
Davis, John Q., 37 Willoughby Bldg
DeHass, T. W., 8 McLean Place.
Denson, H. A., 308 Van Vorhis Bldg.
Dunning, L. H., 37 Willoughby Bldg.
Durham, C. O., 602 S. Illinois.
Dunlavy, I. E., 1735 College.
Dodds, W. T. S., 342 N. Claypool Bldg.
Dorsey, Francis O., 212 N. Claypool Bldg.
DeVaney, Mitchell O., 522 Parkway.
Dugan, Thomas J., 2520 W. Wash.
Earp, Samuel E., 24½ Kentucky.
Eastman, Thomas B., 331 N. Del.

Eastman, J. Rilus, 331 N. Del.
Edenharter, George F., Central Insane Hospital.
Erdman, Bernhard, 430 N. Claypool Bldg.
Fry, B. C., 401 N. Claypool Bldg.
Ferguson, C. E., 327 N. Claypool Bldg.
Fletcher, C. I., 713 S. Meridian.
Fletcher, W. B., 1140 E. Market.
Furniss, S. A., 132 W. New York.
Freeland, John L., 711 Shelby.
Foxworthy, Frank W., 316 North Meridian.
Ford, J. H., 226 N. Claypool Bldg.
Ford, Katherine C., 1111 W. New York.
Gabe, Harry E., 911 Virginia.
Graham, A. B., 27 Willoughby Bldg.
Graham, Hannah M., 11 Marion Block.
Garstang, R. W., 226 N. Claypool Bldg.
Garshweiler, W. P., 160 E. Market.
Goar, C. S., 1134 S. Meridian.
Gemmill, Harry C., 31st and Northwestern.
House, John W., 2304 Talbott.
Hodges, Fletcher, 2 W. New York.
Hodges, E. F., 2 W. New York.
Harvey, Jesse B., 320 N. Claypool Bldg.
Haslep, Marie, 43 Willoughby Bldg.
Hays, Franklin W., 247 N. Penn.
Heath, Frederic C., 427 N. Claypool Bldg.
Hoag, W. I., 2625 W. Washington.
House, G. H. F., 3015 N. Illinois.
Hoskins, Walter D., 610 Newton Claypool Bldg.
Hobbs, Alice L., 217 W. Eleventh.
Hurty, John N., State House.
Hood, Thomas C., 316 N. Meridian.
Hughes, William F., 950 S. Meridian.
Hutchins, F. F., 809 N. Alabama.
Herbert, Leo. H., 1214 Prospect.
Johnson, W. H., Brightwood.
Jameson, Henry, 212 N. Claypool Bldg.
Jennings, W. L., Bridgeport.
Jeffries, W. E., 814 Virginia.
Jobes, Norman E., 610 N. Claypool Bldg.
Jaeger, A. S., 433 N. Claypool Bldg.
Johnston, S. A., 333 N. Claypool Bldg.
Kahn, David L., 323 N. Delaware.
Kyle, John J., 226 N. Claypool Bldg.
Kahlo, George D., 316 N. Meridian.
Kiser, Edgar F., 107 E. 22d.
Kennedy, Bernays, 333 N. Claypool Bldg.
Kimberlin, A. C., 47 Willoughby Bldg.
Kolmer, John, 17 W. Ohio.
Knox, E. S., 1404 Hoyt.
Keene, T. V., 1222 N. Illinois.
Knabe, Helene, 1151 Bates.
Layman, Daniel W., 318 N. Claypool Bldg.
Link, William H., 743 Virginia.
Link, Goethe, 743 Virginia.
Langdon, Harry K., 2454 Central.
Leathers, D. A., 1017 College.
Lee, Geo. W. H., 2404 N. Illinois.
Little, Chas. S., 944 Ft. Wayne.
Long, John B., 760 W. New York.
Lohrman, Henry, 427 N. Claypool Bldg.
Lukenbill, O. G., 2219 E. Wash.
Malone, L. A.,* Indianapolis.
Medsker, Irwin T., 2618 W. Mich.
McLeay, J. D., 11-12 Masonic Tem.
McConnell, Maude W., 902 S. East.
McKee, J. F., Indianapolis.
Marlatt, C. L., 760 Mass.
Malpas, S. H., Hume Bldg.
Morris, John E., 428 E. Nebraska.
Masters, John L., 249 N. Penn.
Maxwell, Allison, 323 N. Delaware.

* Deceased.

Morrison, Frank A., 13 Willoughby Bldg.
Morrow, Joseph E., Van Vorhis Bldg.
Moschell, J. D., Indianapolis.
Moore, H. A., 318 N. Claypool Bldg.
Martin, Paul F., City Hospital.
McShane, John T., 229 N. Penn.
McDonald, W. B., New Augusta.
McAlexander, R. O., 405 E. 16th.
MacDonald, J. A., Central Insane Hospital.
McCracken, A. J., 529 N. Claypool Bldg.
Neier, O. C., 5502 E. Washington.
Neu, Chas F., Insane Hospital.
Noble, Thomas B., 427 N. Claypool Bldg.
Newcomb, John Ray, 212 N. Claypool Bldg.
O'Dell, Thos. A., 3624 E. 25th.
Outland, Edgar M., 547 N. Claypool
Oliver, John H., 422 N. Delaware.
Orf, George, Indianapolis.
Petersdorf, Gustav A., 508 Parkway.
Pfafflin, Chas. A., 443 N. Claypool Bldg.
Page, LaFayette, 30 Willoughby Bldg.
Pantzer, Hugo O., 40 Willoughby Bldg.
Payne, J. H., Julietta, Ind.
Pettijohn, Otto B., 456 Blake.
Pettijohn, Fred L., 504 E. 21st.
Pfaff, O. G., 333 N. Claypool Bldg.
Pfaff, John, 333 N. Claypool Bldg.
Potter, Theodore, 610 N. Claypool Bldg.
Pendleton, George, 925 N. West.
Phipps, J. M., Indianapolis.
Reyer, E. C., 311 N. Claypool Bldg.
Ridpath, H. W., 642 E. 16th.
Ritter, C. L., 232 N. Claypool Bldg.
Ritter, R. H., 47 Willoughby Bldg.
Robertson, John F., 2313 E. Mich.
Row, George S., 401 N. Penn.
Rowe, Louis M., 332 N. Delaware.
Ross, David, 12 Willoughby Bldg.
Robinson, W. B., 53 Willoughby Bldg.
Shipp, Floyd N., 323 N. Delaware.
Schaefer, C. R., 1202 Madison.
Scherer, S. P., 513 N. Delaware.
Scott, John T., 634 N. Claypool Bldg.
Sigler, Geo. A., 347 N. Claypool Bldg.
Smith, Martha J., 415 N. Delaware.
Spink, Mary A., 1140 E. Market.
Sterne, A. E., 1820 E. 10th.
Stillson, J. O., 440 N. Pennsylvania.
Stockton, Sarah, Insane Hospital.
Storch, L. A. E., 1342 S. Meridian.
Sutcliffe, John A., 7 Baldwin Bldg.
Schneck, Luella M., 249 N. Penn.
Sharp, Walter N., 408 N. Claypool Bldg.
Spink, Urbana, 1140 E. Market.
Sowder, Chas. R., 323 N. Delaware.
Seiberth, Jacob, Julietta.
Sommer, E. F., 406 N. California.
Spencer, M. J., 3540 E. Wash.
Sluss, J. W., 216 N. Claypool Bldg.
Sheek, D. W., Greenwood.
Taylor, James H., The Chalfant.
Thompson, D. A.,* Indianapolis.
Thompson, James L., 232 N. Ill.
Todd, Robt. N., Insane Hospital.
Torian, O. N., 3002 N. Illinois.
Tomlin, W. S., 608 N. Illinois.
Turner, Harriet E., 401 N. Penn.
Thorner, Moses, The Willoughby.
Thurston, H. S., 224 N. Meridian.
Westover, R. Leland, 509 N. Claypool Bldg.
White, W. C., 33 Willoughby Bldg.
Wagner, T. A., 148 N. Delaware.
Wright, Wm. M., 13 Willoughby Bldg.
Ward, A. O., 339 Virginia.
Ward, Clay L., 1475 E. New York.

*Deceased.

Watters, Patrick J., Central Insane Hospital.
Wilson, A. L., 1520 N. Capitol.
Wishard, W. N., 529 N. Claypool Bldg.
Wishard, W. H., 506 N. Capitol.
Woolen, Green V., 20 W. Ohio.
Wynn., Frank B., 311 N. Claypool Bldg.
Weer, H. H., 12 Willoughby Bldg.
Wright, Chas. E., State Life Bldg.
Williams, James L., 232 N. Claypool Bldg.
Wolferman, A. Gertrude, 433 Va.
Wheeler, H. H., 1535 N. Illinois.
Ward, Joseph Henry, 437½ Indiana.
Weil, Harry J., 2103 E. Michigan.
Willis, Edw. A., The Chalfant.
Wallace, Lew E., 232 N. Illinois.
Woollen, Herbert M., 20 W. Ohio.

HONORARY.

Chatard, Rt. Rev. Bishop, Indianapolis.
Florer, T. W., Texas.
Kitchen, J. M., Indianapolis.
Field, M. H., Indianapolis.
Hacker, T. S., Indianapolis.
Walling, Willoughby, Chicago.
Kemper, G. W. H., Muncie, Ind.
Lewis, E. R., Washington, D. C.
Furniss, Henry W., Bahia, Brazil.
Waterman, L. D., Indianapolis.
Jameson, P. H., Indianapolis.
McNab, P., Indianapolis.
Patterson, A. W., Indianapolis.
Comingor, J. A., Indianapolis.
Hervey, J. W.,* Indianapolis.
Stone, R. F., Indianapolis.
Ferguson, F. C., Indianapolis.
Moore, S. H., Indianapolis.
Avery, J. P., Indianapolis.
Ryan, W. B., Indianapolis.

REMOVED.

Jeffries, Kenneth I., Richmond.
Malone, B. Eliz., Laporte.
McGaughey, S., Lafayette.
Gates, W. J., Indianapolis.
Davidson, W. R., Madison.

SUSPENDED.

Buehler, Eugene, Indianapolis.
Buehler, Amelia K., Indianapolis.
Collop, Emma J., Indianapolis.
Combs, Geo. W., Indianapolis.
Culver, D. M., Indianapolis.
Groff, J. H., Cumberland.
Hodgin, E. E., Indianapolis.
Jones, H. I., Indianapolis.
Long, R. W., Indianapolis.
Ostroff, H., Indianapolis.
Pray, F. M., Indianapolis.

*Deceased.

MARSHALL COUNTY.

OFFICERS.

O. A. Rea, President.
S. C. Loring, Vice-Pres.
H. P. Preston, Secretary.
L. D. Eley, Treasurer.
Novitas B. Aspinall, Delegate.

CENSORS.

A. C. Holtzendorff.
T. A. Borton.
R. C. Stephens.

MEMBERS.

Aspinall, Novitas B., Plymouth.
Borton, T. Artemas, Plymouth.
Eley, Lorenzo D., Plymouth.
Eidson, J. W., Bourbon.
Gould, S. W., Argos.
Holtzendorff, A. C., Plymouth.
Holtzendorff, C. F., Plymouth.
Johnson, Luther, Bourbon.
Knott, D. C., Plymouth.
Loring, S. C., Plymouth.
Nusbaum, C. E., Bremen.
Preston, H. P., Plymouth.
Parker, E. E., Culver.
Rea, O. A., Culver.
Rea, Robert H., Culver.
Richey, Samuel R., Donaldson.
Stephens, R. C., Plymouth.
Wahl, G. F., Bremen.
Wiseman, B. W. S., Culver.
Radcliffe, F. E., Bourbon.
Sarber, W. C., Argos.

HONORARY.

Brooks, Jared E., Plymouth.
Wiseman, Sumner, Culver.
Cisna, W. R., Chicago, Ill.
Reed, Charles B., Chicago, Ill.

SUSPENDED.

Harris, Cyrus M., Bourbon.
Johnson, Sherman A., Tippecanoe.
Kaszer, Jacob, Plymouth.
Moore, C. W., Teegarden.
Parks, B. W., Bourbon.
Reeves, E. W., Burr Oak.
Wilson, D. W., Argos.
Brown, Charles A., Plymouth.

MARTIN COUNTY.

OFFICERS.

T. U. Hays, President.
M. M. Dooley, Vice-Pres.
J. W. Strange, Sec.-Treas.
J. C. Trueblood, Delegate.

CENSORS.

I. N. Plummer.
G. M. Robinson.
T. N. Braxtan.

MEMBERS.

Shirley, H. W., Shoals.
Plummer, I. N., Shoals.
Wright, B. C., Indian Springs.
Dooley, M. M., Loogootee.
Trueblood, J. C., Loogootee.
Robinson, G. M., Loogootee.
Braxtan, T. N., Loogootee.
Hays, T. A., Burns City.
Stone, Chas. E., Windom.
Strange, J. W., Loogootee.
Brittain, S. H., Loogootee.
Dollens, T. C., Trinity Springs.

SUSPENDED.

Freeman, G. M., Shoals.

MIAMI COUNTY.

OFFICERS.

Jared Spooner, President.
Ellis H. Andrews, Vice-Pres.
D. C. Ridenour, Secretary.
J. O. Ward, Treasurer.
M. C. Kimball, Delegate.

CENSORS.

John W. Moore.
J. C. Fretz.
O. U. Carl.

MEMBERS.

Andrews, E. H., Peru.
Bloomfield, E. M., Peru.
Boggs, M. M., Macy.
Carl, O. U., Peru.
Foust, P. G., Santa Fe.
Fretz, J. C., Deedsville.
Griswold, E. H., Peru.
Helm, C. J., Peru.
Kimball, M. C., Converse.
Kalbfleisch, A. H., Peru.
Kratzer, E. F., Peru.
Moore, Jno. W., Mexico.
Ridenour, D. C., Peru.
Smith, A. F., Waupecong.
Spooner, Jared, Peru.
Wainscott, O. C., Peru.
Ward, J. O.. Peru.
Yarling, J. E., Peru.
Peters, J. B., Macy.
Higgins, J. B., Peru.
Elkenberry, A. A., Peru.

SUSPENDED.

Magruder, J. W., Peru.
Wilson, J. S., Macy.

REMOVED.

Tyler, Jno. L., Mexico.

MONROE COUNTY.

OFFICERS.

G. F. Holland, President.
Lucy W. Gardner, Vice-Pres.
F. H. Batman, Sec.-Treas.

CENSORS.

O. F. Rogers.
W. N. Culmer.
J. E. Harris.

MEMBERS.

Batman, F. H., Bloomington.
Gardner, Fletcher, Bloomington.
Lowder, Lillie A., Bloomington.
Mainwaring, W. H., Bloomington.
Pohlman, A. G., Bloomington.
Rogers, O. F., Bloomington.
Rogers, R. C., Bloomington.
Simmons, W. D., Clear Creek.
Stout, O. M., Stanford.
Holland, P. C., Bloomington.
Holland, G. F., Bloomington.
Myers, Burton D., Bloomington.
Harris, J. E., Bloomington.
Harris, C. E., Bloomington.
Lowder, L. T., Bloomington.
Culmer, W. N., Bloomington.
Baker, J. V., Harrodsburg.
Tourner, J. P., Bloomington.
Tourner, F. F., Bloomington.
Ross, J. C., Bloomington.
Smith, Thurston, Bloomington.
Schaeffer, G. C., Bloomington.
Whetsell, L. E., Bloomington.
Wiltshire, J. W., Bloomington
Gardner, Lucy W., Bloomington.

SUSPENDED.

Weir, C. T., Bloomington.
Zaring, P. A., Bloomington.

MONTGOMERY COUNTY.

OFFICERS.

W. H. Ristine, President.
T. J. Griffith, Vice-Pres.
Paul J. Barcus, Sec.-Treas.
E. H. Cowan, Delegate.

CENSORS.

E. H. Cowan.
H. E. Greene.
S. L. Ensminger.

MEMBERS.

Allhands, F. D., Wingate.
Ball, T. Z., Waveland.
Batman, W. F., Ladoga.
Barcus, P. J., Crawfordsville.
Brown, I. L., Alamo.
Bounnell, H. M., Waynetown.
Cowan, E. H., Crawfordsville.
Davidson, J. F., Crawfordsville.
Dennis, F. A., Crawfordsville.
Elliott, J. W., Lindon.
Eusminger, S. L., Crawfordsville.
Etter, J. R., Crawfordsville.
Green, H. E., Crawfordsville.
Griffith, M. E. H., Crawfordsville.
Griffith, T. J., Crawfordsville.
Girard, R. H., Crawfordsville.
Hamilton, A. N., Waynetown.
Hutchings, B. F., Crawfordsville.
Hutchings, B. M., Crawfordsville.
Jones, O. H., Crawfordsville.
Keegan, E. W., Crawfordsville.
King, R. F., New Ross.
Lidikay, E. C., Ladoga.
Niven, J. S., Crawfordsville.
Price, E. O., Ladoga.
Ristine, W. H., Crawfordsville.
Shonkwiler, F. M., New Market.
Sigmond, H. W., Crawfordsville.
Swope, A. A., Crawfordsville.
Williams, G. T., Crawfordsville.
Walden, C. H., New Market.
West, B. F., Singapore Straits Settlement.
Peacock, S. R., Ladoga.

MORGAN COUNTY.

OFFICERS.

E. M. Sweet, President.
D. P. Kennedy, Vice-Pres.
F. C. Robinson, Sec.-Treas.
A. S. Tilford, Delegate.

CENSORS.

J. H. Maxwell.
Otis Sweet.
Guy Seaton.

MEMBERS.

Brackney, M. F., Mooresville.
Brown, A. S., Paragon.
Gravis, C. M., Martinsville.
Green, E. V., Martinsville.
Hartsock, W. B., Waverly.
Hendricks, W. E., Martinsville.
Hibbs, Irwin, Martinsville.
Henson, Theodore, Martinsville.
Kennedy, D. P., Martinsville.
Lindley, C. M., Brooklyn.
Maxwell, F. R., Martinsville.
Magenheimer, V. A., Waverly.
Monical, G. S., Martinsville.
Robinson, F. C., Martinsville.
Robinson, H. C., Martinsville.
Sweet, E. M., Martinsville.
Sweet, Otis, Martinsville.
Seaton, Chas., Martinsville.
Seaton, Guy, Martinsville.
Sandy, W. J., Martinsville.
Tilford, A. S., Martinsville.

SUSPENDED.

Thompson, Wm. L., Mooresville.
Van Sant, W. P., Brooklyn.
Williamson, R. S., Paragon.
Wharton, J. O., Exchange.
Hylton, A. J., Mooresville.
Reagan, A. W., Mooresville.
Kennedy, John, Paragon.
Spoor, J. S., Brooklyn.
Bradley, J. S., Hall.
Breedlove, Geo. B., Brooklyn.
Maxwell, J. H., Martinsville.

NOBLE COUNTY.

OFFICERS.

J. Hamilton Nye, President.
J. L. Gilbert, Vice-Pres.
W. F. Carver, Sec.-Treas.
J. W. Hays, Delegate.

CENSORS.

J. W. Hays.
N. J. Shook.
W. K. Mitchell.

MEMBERS.

Black, F. W., Ligonier.
Bowker, J. J., LaOtto.
Carver, W. F., Albion.
Clapp, Fred R., Ligonier.
Depew, E. W., Wolf Lake.
Franks, W. H., Ligonier.
Franks, O. P., Brimfield.
Gardner, C. A., Kendallville.
Gilbert, Joseph L., Kendallville.
Goodwin, C. B., Kendallville.
Greene, Thomas C., Albion.
Greene, W. T., Albion.
Hayes, John W., Albion.
Johnson, W. A., Wawaka.
Lemmon, S. W., Albion.
Luckey, J. E., Wolf Lake.
Maloney, F. C., Avilla.
Miller, B. E., Albion.
Morr, J. W., Albion
Nye, J. H., Cromwell.
Seymoure, C. A., Wawaka.
Shaw, S. L., Kimmel.
Shoab, W. A., Ligonier.
Shook, N. J., Kendallville.
Teal, Geo. A., Kendallville.
Tucker, H. G., Cromwell.
Veasey, W. M., Avilla.
Williams, W. A., Kendallville.
Woodruff, C. A., Ligonier.
Mitchel, W. K., Ligonier.
Knepper, E. W.,* Albion.
Moore, N. B.,* Merriam.

* Deceased.

ORANGE COUNTY.

OFFICERS.

E. D. Laughlin, President.
John L. Howard, Vice-Pres.
R. E. Baker, Sec.-Treas.

CENSORS.

O. H. Stewart.
S. L. Lingle.
W. W. Hoggatt.

MEMBERS.

Baker, R. E., Orleans.
Boyd, C. L., Paoli.
Boyd, C. E., West Baden.
Dillinger, J. R., French Lick.
Hunt, F. P., Leipsic.
Hasselmiller, Mort. West Baden.
Hoggatt, W. W., French Lick.
Hazelwood, Green, Chambersburg.
Laughlin, E. D., Orleans.
Lindley, Laban, Paoli.
Lingle, S. L., Paoli.
Lindenbeger, Irwin, French Lick.
Maris, J. I., Paoli.
McFarland, C. C., Abydell.
Patton, W. H., Orleans.
Ritter, T. B., Orleans.
Ritter, H. O., Orangeville.
Stewart, O. H., Orleans.
Sloan, W. W., French Lick.
Teaford, S. F., Paoli.
Tolliver, J. A., French Lick.
Howard, J. A., West Baden.

OWEN COUNTY.

OFFICERS.

Jacob Coble, President.
H. A. Fox, Vice-Pres.
Allen Pierson, Sec.-Treas.
Allen Pierson, Delegate.

CENSORS.

N. D. Cox.
Renos H. Richards.
Jas. T. Hazel.

MEMBERS.

Coble, Jacob, Spencer.
Ralph R. Coble, Spencer.
Cox, Nathaniel D., Spencer.
Davis, William M., Coal City.
Fox, Henry A., Gosport.
Fisher, Benjamin T., Spencer.
Gantz, Thomas, Freedom.
Hazel, James T., Freedom.
Hickam, Wilford,* Spencer.
Jones, Jesse M., Cataract.
Kennedy, Albert C., Patricksburg.
McDonald, David H., Quincy.
Maddox, W. B. S., Vandalia.
Osgood, Howard G., Gosport.
Pierson, Allen, Spencer.
Pritchard, Caleb A., Gosport.
Richards, Samuel D., Patricksburg.
Richards, Renos H., Patricksburg.
Sloan, John N., Spencer.
Spear, Albert H., Spencer.
Stucky, John M., Gosport.
Stucky, Frederick V., Gosport.
Wiles, Frank M., Indianapolis.
White, Claudius H., Cataract.
Yocum, Boaz, Coal City.
Holtzman, Rice C., Stinesville.
Willoughby, George E., Gosport.

*Deceased.

SUSPENDED.

Williams, Frank A., Cuba.

REMOVED.

Chenoweth, E. B., Quincy.

PARKE COUNTY.

OFFICERS.

J. I. Norman, President.
W. H. Gillum, Secretary.
C. C. Morris, Treasurer.

MEMBERS.

Caplinger, C. A., Wallace.
Gillum, W. H., Rockville.
Goss, M., Rockville.
Lynch, J. Y., Rosedale.
Martin, A., Bellmore.
Morris, C. C., Rockville.
Williamson, A. A., Marshall.
Norman, J. I., Judson.
Peare, R. C., Bellmore.
Rogers, H. C., Rockville.

SUSPENDED.

Farver, G. W., Montezuma.

PERRY COUNTY.

OFFICERS.

Chas. H. Mason, President.
C. E. Cox, Vice-Pres.
Wm. H. Muelchi, Secretary.
C. M. Brucker, Treasurer.
Wm. H. Muelchi, Delegate.

CENSORS.

E. R. Snyder.
C. T. Hendershot.
J. E. Taylor.

MEMBERS.

Brucker, C. M., Tell City.
Mason, Chas. H., Tell City.
Muelchi, Wm. H., Tell City.
Hendershot, C. T., Cannelton.
Cox, C. E., Cannelton.
Cluthie, Wm., Tell City.
Rothrock, M. W., Tell City.
Allenbaugh, E. E., Huff.
Snyder, E. R., Troy.

SUSPENDED.

Cramm, C. J., Fulda.

Mayfield, A. L., Bristow.
Hargis, W. T., Derby.
Taylor, J. E., Leopold.
Hendrickson, A. M. D., Magnet.
Bennett, J. B., Cannelton.
Dome, D. C., Troy.
Lee, J. H., Rome.
Wedding, M. F., Rome.
Miller, H. L., Leopold.
White, David, Tobinsport.
Weiss, H. G., Lamar.

PIKE COUNTY.

OFFICERS.

Geo. B. De Tar, President.
O. A. Byers, Vice-Pres.
Michael Robinson, Sec.-Treas.
G. L. Ireland, Delegate.

CENSORS.

J. T. Kime.
T. W. Bassinger.
W. M. Hunter.

MEMBERS.

Coleman, J. W., Petersburg.
Ireland, G. L., Winslow.
DeTar, Geo. B., Winslow.
Bailey, H. T., Glezen.
Robinson, Michael., Glezen.
Kime, J. T., Petersburg.
Imel, E. S., Petersburg.
Basinger, T. W., Petersburg.
Byers, O. A., Petersburg.

Hunter, W. M., Petersburg.
Abbott, Clarence, Otwell.
Bethel, W. J., Winslow.

SUSPENDED.

Taylor, E. C., Winslow.
Taylor, D. E., Velpen.
Logan, A. R., Algiers.

PORTER COUNTY.

OFFICERS.

E. J. Ball, President.
S. J. Young, Vice-Pres.
E. H. Powell, Sec.-Treas.

CENSORS.

R. D. Blount.
H. N. Evans.
J. N. Kelley.

MEMBERS.

Loring, D. J., Valparaiso.
Young, S. J., Valparaiso.
Carson, J. C., Valparaiso.
Evans, H. M., Valparaiso.
Blount, R. D., Valparaiso.
Letherman, A. P., Valparaiso.
Ball, E. J., Valparaiso.
Powell, E. H., Valparaiso.
Short, R. B., Union Mills.
Noland, P. D., Kouts.
Dobbins, A. O., Wheeler.
Kelley, J. N., Westville.
Warren, C. L., Chesterton.
Cone, Edmond, Valparaiso.
Howerth, Cora, Valparaiso.
Yohn, E. F., Valparaiso.
Urmston, Paul R., Valparaiso.

SUSPENDED.

Vickery, C. R., Valparaiso.
Crawford, E. F. W., Hanna.
Leeson, G. M., Wanatah.
Wiltfong, C. O., Chesterton.

POSEY COUNTY.

OFFICERS.

C. H. Fullenwider, President.
G. H. Runcie, Vice-Pres.
F. L. Stallings, Sec.-Treas.
F. L. Stallings, Delegate.

CENSORS.

J. E. Gudgel.
Chas. Auburn.
Claude Rawlings.

MEMBERS.

Stormont, R. M., Stewartsville.
Stallings, F. L., Caborns.
Hardwick, R. L., Mt. Vernon.
Arburn, Chas., Wadesville.
Doerr, J. E., Mt. Vernon.
Fullenwider, C. H., Mt. Vernon.
Hensler, Ernest C., Howell R. R.
Rawlings, S. O., New Harmony.
Wilson, T. W., New Harmony.
Holton, Wm., New Harmony.
Cremeans, W. C., Farmersville.
Runcie, G. H., Poseyville.
Glaze, J. M., New Harmony.
Whiting, U. G., Wadesville.
Ramsey, D. C., Mt. Vernon.
Hicks, C., Mt. Vernon.
Emmick, F. C., Mt. Vernon.
Welch, D. W., Mt. Vernon.
Barrett, C. P., Oliver.
Hall, F. J., Grafton.
Flucks, Carl, St. Wendell.
Cox, J. W., Bufkin.
Cosby, L. B., Cynthiana.
Smith, G. C., Poseyville.
Lockhardt, T. L., New Harmony.
Boren, S. W., Poseyville.
Gudgel, J. E., Cynthiana.
Montgomery, S. B., Cynthiana.
Turman, J. I. S., Cynthiana.
Rutter, John, Cynthiana.
Rawlings, C. L., New Harmony.
Petitjean, J. W., St. Wendell.
Grim, Simon, Caborns.
Henderson, Samuel, St. Phillips.
Welborn, G. W.,* Stewartsville.

*Deceased.

PULASKI COUNTY.

OFFICERS.

William Kelsey, President.
J. J. Thomas, Vice-President.
W. H. Thompson, Sec.-Treas.
G. W. Thompson, Delegate.

MEMBERS.

Thomas, J. J., Winamac.
Thompson, G. W., Winamac.
Thompson, W. H., Winamac.
Thomas, R. F., Winamac.
Kelsey, William, Monterey.
Kelsey, W. E., Monterey.
Kelsey, A. J., Monterey.
Stevens, H. C., Star City.

SUSPENDED.

Moss, D. F., Winamac.
Moss, W. C., Winamac.
Smith, A. H., Star City.

PUTNAM COUNTY.

OFFICERS.

J. L. Preston, President.
Eugene Hawkins, Vice-Pres.
J. V. Bastin, Secretary.
L. M. Hanna, Treasurer.

CENSORS.

C. C. Collins.
C. U. Stroube.
J. F. Cully.

MEMBERS.

Bastin, J. V., Greencastle.
Collins, C. C., Roachdale.
Cully, John F., Bainbridge.
Evans, E. B., Greencastle.
Gillespie, J. F., Reelsville.
Hanna, L. M., Greencastle.
Hawkins, E., Greencastle.
Hope, C. F., Coatsville.
Horn, A. H., Putnamville.
Hutcheson, W. R., Greencastle.
King, J. M., Greencastle.
Mullinix, P., Greencastle.
Preston, J. L., Greencastle.
McGaughey, Wm., Greencastle.
Stroube, C. N., New Maysville.
Tucker, W. W., Greencastle.
Zaring, C. T., Greencastle.
Hurst, E. M., Cloverdale.
Fulkerson, C. D., Belle Union.

RANDOLPH COUNTY.

OFFICERS.

Aaron G. Rogers, President.
Grant C. Markle, Vice-Pres.
Forrest A. Chenoweth, Sec.-Treas.
Granville Reynard, Delegate.

CENSORS.

Chas. E. Spitler.
Delena S. Wiggins.
James H. Moroney.

MEMBERS.

Able, O. E., Trenton.
Blair, J. S., Lynn.
Coffin, A., Carlos City.
Cromer, L. G., Union City.
Cromer, Mary, Union City.
Cox, C. R., Lynn.
Current, O. E., Farmland.
Chenoweth, N. T., Windsor.
Chenoweth, F. A., Winchester.
Davis, L. N., Farmland.
Evans, Caleb S., Union City.
Evans, J. J., Winchester.
Hunt, B. S., Winchester.
Hinshaw, Otis W., Lynn.
Markle, G. C., Winchester.
Moroney, J. H., Winchester.
Nixon, John, Farmland.
Rogers, A. G., Parker City.
Reynard, G., Union City.
Rine, E. W., Winchester.
Spitler, Chas. E., Saraotga.
Shaddy, Elmer D., Saratoga.
Wiggins, D. S., Losantville.
Root, Wm. W., Parker.
Botkin, Chas. L., Winchester.

SUSPENDED.

Trenary, D. W., Modoc.
McCormick, W. D., Modoc.

RIPLEY COUNTY.

OFFICERS.

Jno. W. Hess, President.
J. G. Jones, Vice-Pres.
T. E. Hunter, Sec.-Treas.
L. T. Cox, Delegate.

CENSORS.

A. W. Miller.
Jno. R. Pate.

MEMBERS.

Beckett, G. T., Versailles.
Freeman, E. D., Osgood.
Forester, Dr., Delaware.
Hunter, T. E., Versailles.
Miller, Albert, Holton.
Olmsted, R. T., Versailles.
Pate, J. R., Milan.
Hess, J. N., New Marion.
Cox, L. T., Napoleon.

SUSPENDED.

Townsend, R. C., Osgood.
Jones, J. G., Versailles.
Kremer, F. M., St. Magdalene.
Coomes, M. J., Osgood.
Olmstead, F. M., Milan.
Pinkston, J. M., Milan.
Cox, J. G., Holton.
Hicks, J. C., Napoleon.

REMOVED.

Coomes, M. J., Versailles.

RUSH COUNTY.

OFFICERS.

W. C. Smith, President.
S. C. Thomas, Vice-President.
W. S. Coleman, Sec.-Treas.
J. C. Sexton, Delegate.

CENSORS.

J. A. Sipe.
J. T. Paxton.
D. D. Van Osdol.

MEMBERS.

Bowen, J. F., Occident.
Blount, R. T., Homer.
Coleman, W. S., Rushville.
Cregor, F. W., Carthage.
Elliott, H. H., Glenwood.
Green, F. H., Rushville.
Hackleman, F. G., Rushville.
Hudleson, L. R., Milroy.
Logan, H. V., New Salem.
Metcalf, H. P., Andersonville.
Parsons, C. H., Rushville.
Paxton, J. T., Glenwood.
Rea, C. S., Falmouth.
Sexton, J. C., Rushville.
Sipe, J. A., Carthage.
Smith, W. H., Rushville.
Smith, W. C., Rushville.
Smith, I. F., Arlington.
Thomas, S. C., Milroy.
VanOsdol, D. D., Rushville.
Wooden, E. I., Rushville.
Hoagland, C. S., Milroy.
Green, Lot,* Rushville.

* Deceased.

ST. JOSEPH COUNTY.

OFFICERS.

W. A. Hager, President.
C. C. Stroupe, Vice-Pres.
H. F. Mitchell, Secretary.
C. M. Butterworth, Treasurer.
J. B. Berteling, Delegate.

CENSORS.

F. M. Sawyer.
J. W. Hill.
J. H. Cannon.

MEMBERS.

Barber, A. E., South Bend.
Berteling, J. B., South Bend.
Brown, J. R., Sumption Prairie.
Butterworth, C. M., South Bend.
Borley, W. E., Mishawaka.
Borley, E. R., South Bend.
Burr, T. S., South Bend.
Boyd-Snee, H., South Bend.
Cannon, J. H., South Bend.
Clark, S. A., South Bend.
Dresch, C. A., Mishawaka.
Daugherty, C. A., South Bend.
Dean, E. R., South Bend.
Dugdale, R. B., South Bend.
Darling, E. S., North Liberty.
Eastman, F. P., South Bend.
Epperson, Adah, South Bend.
Fink, H. A., South Bend.
Greene, J. B., Mishawaka.
Galloway, U. G., South Bend.
Hager, W. A., South Bend.
Hansel, C. A., Lakeville.
Hill, J. W., South Bend.
Holtzendorff, H. C., Mishawaka.
Hewitt, H. S., Mishawaka.
Kaple, J. D., South Bend.
Lent, E. J., South Bend.
Lockwood, F. W., South Bend.
Milligan, J. W., South Bend.
Miranda, W. F., Walkerton.
Mitchell, H. F., South Bend.
Moore, E. P., South Bend.
Montgomery, H. T., South Bend.
McNamara, D. W., South Bend.
Miller, H. M., South Bend.
Mills, W. F., South Bend.
Proudfit, Louis, Osceola.
Peck, Walter M., South Bend.
Rennoe, C. A., South Bend.
Sawyer, F. M., South Bend.
Stoltz, Chas., South Bend.
Seaman, J. B., Osceola.
Stroupe, C. C., Mishawaka.
Seymour, Theo. F., Mishawaka.
Terry, C. C., South Bend.
Taylor, Chas. E., South Bend.

Urquhart, R. T., South Bend.
Van Pelt, R. T., South Bend.
Von Baranda, Oscar, South Bend.
Varier, J. A., South Bend.
Wickham, W. A. R., South Bend.
Wegner, W. G., South Bend.
Wood, W. F., Mishawaka.
Warster, Wm. H., North Liberty.

SUSPENDED.

Dresch, C. A., Mishawaka.
Fulton, Dudley, South Bend.
Hill, G. S., South Bend.
Wrynhart, R. T., South Bend.

REMOVED.

Scherfee, J. F., South Bend.
Zaliski, Jos. P., South Bend.

SCOTT COUNTY.

OFFICERS.

Levi McClain, President.
T. H. Close, Vice-President.
T. E. Biery, Sec.-Treas.
A. H. Lothrop, Delegate.

CENSORS.

Geo. F. Cline.
A. J. Sarver.
O. C. Murphy.

MEMBERS.

Biery, T. E., Scottsburg.
Cline, Geo. F., Scottsburg.
Close, T. H., Scottsburg.
Hawn, C. E., Little York.
Kendall, Arnold P., Scottsburg.
Lothrop, A. H., Lexington.
McClain, W. L., Scottsburg.
McClain, Levi M., Scottsburg.
Murphy, O. C., Scottsburg.

SUSPENDED.

Sarver, A. J., Scottsburg.

SHELBY COUNTY.

OFFICERS.

Joseph Bowlby, President.
J. W. Parrish, Vice-Pres.
Morris Drake, Secretary.
H. E. Phares, Treasurer.

CENSORS.

F. Campbell.
S. L. Strickler.
G. L. Inlow.

MEMBERS.

Bowlby, Joseph, Shelbyville.
Campbell, Frank, Shelbyville.
Drake, Morris, Shelbyville.
Ray, Frank E., Shelbyville.
Parrish, J. W., Shelbyville.
Phares, H. E., Shelbyville.
Green, T. G., Shelbyville.
McFadden, Walter G., Shelbyville.
Kennedy, T. C., Shelbyville.
Kennedy, Samuel, Shelbyville.
Kennedy, W. H., Shelbyville.
Keeney, B. G., Shelbyville.
Connelly, H. M., Shelbyville.
Inlow, I. W., Blue Ridge.
Inlow, G. L., Blue Ridge.
Randolph, D. F., Waldron.
Keeling, J. E., Waldron.
Hess, M. M., Morristown.
Patten, V. C., Morristown.
Rubush, T. R., London.
Snider, J. W., Fairland.
Perry, Chas., Lewis Creek.
Pettigrew, D. A., Flat Rock.

SUSPENDED.

Boone, B. H., Boggstown.
Strickler, S. L., Boggstown.
Green, W. F., Shelbyville.
Jenkins, J. R., Boggstown.
Estes, J. W., Shelbyville.
Snider, Warren, Fairland.

SPENCER COUNTY.

MEMBERS.

Adye, C. H., Rockport.
Baumgaertner, O. C., Rockport.
Buxton, Eva, Rockport.
Weiss, H. G., Lamar.
Wetzel, George, Rockport.

SUSPENDED.

Dome, H. S., Eureka.
Gwaltney, S. P., Midway.
Harrom, G. W., Hatfield.
Harter, Harry, Newtonville.
Jolly, J. C., Lake.
Logsdon, W. T., Rockport.
Dailey, J. M., Rockport.

STARKE COUNTY.

OFFICERS.

W. J. Solt, Delegate.
S. I. Brown, Secy.

MEMBERS.

Brown, S. I., Knox.
Solt, W. J., San Pierre.
Jones, H., Ober.
Jones, P. W., Ober.
Wright, M. R., Knox.

SUSPENDED.

Englerth, P. O., North Judson.

STEUBEN COUNTY.

OFFICERS.

H. D. Wood, President.
F. B. Humphrey, Vice-Pres.
T. J. Creel, Sec.-Treas.
H. D. Wood, Delegate.

CENSORS.

T. B. Williams.
T. F. Wood.
W. H. Waller.

MEMBERS.

Creel, T. J., Angola.
Cameron, J. F., Hamilton.
Humphrey, F. B., Angola.
Kimmel, A. J., Hudson.
Ritter, Mary, Angola.
Wood, T. F., Angola.
Wood, W. W., Angola.
Wood, H. D., Angola.
Ott, J. E., Ashley.
Lane, W. H., Angola.
Waller, W. H., Angola.
Williams, T. B., Angola.
Sutherland, P. N., Angola.

SUSPENDED.

Cunningham, H. L., Salem Center.

SULLIVAN COUNTY.

OFFICERS.

A. Cushman, President.
C. F. Briggs, Vice-Pres.
E. M. Corbin, Sec.-Treas.
C. F. Briggs, Delegate.

CENSORS.

W. N. Thompson.
Chas. E. Amerman.
J. L. Durham.

MEMBERS.

Vancleave, R. H., Farmersburg.
McConnell, J. E., Carlisle.
Bedwell, T. S., Dugger.
Amerman, C. E., Dugger.
Cushman, A., Graysville.
Thixtun, E. D., Sullivan.
Caffee, A. H., Hymera.
Durham, J. L., Graysville.
Briggs, C. F., Sullivan.
Thompson, W. N., Sullivan.
Yager, E. A., Graysville.
Corbin, E. M., Sullivan.
Parker, O. O., Merom.
Miles, James, Merom.
Edwards, C. H., Sullivan.
Freeman, Joseph, Sullivan.
Walters, C. R., Paxton.
Neff, J. H., Fairbanks.
Crowder, J. R., Sullivan.
Crowder, R. H., Sullivan.
Deputy, Ernest M., Dugger.
Maple, J. B., Shelburn.
Goshorn, Leonard, Hymera.
Shanklin, Leslie B., Sullivan.
Wrork, J. H., Shelburn.
Coulson, S. B., Jackson Hill.
Bland, H. E., Fairbanks.
Harper, J. A., Shelburn.
Thralls, C. W., Hymera.
Thralls, R. T., Hymera.

SUSPENDED.

Jackson, J. H., Pleasantville.
Lisman, J. W., New Lebanon.
Parker, J. J., Merom.
Pirtle, G. W., Carlisle.

SWITZERLAND COUNTY.

OFFICERS.

J. P. Ward, President.
J. H. Shaddy, Vice-Pres.
H. A. Greenleaf, Sec.-Treas.
J. P. Ward, Delegate.

CENSORS.

L. H. Bear.
Hugh Thiebaud.
D. N. Hayden.

MEMBERS.

Bear, Lowery H., Vevay.
Culbertson, Scott, Vevay.
Greenleaf, H. A., Markland.
Hayden, David N., Vevay.
Loomis, Chas., Vevay.
Rous, Hannah C.,* Vevay.
Smith, J. W., Vevay.
Shaddy, Jno. H., Vevay.
Ward, Jno. P., Vevay.
Woolen, Levin J., Vevay.
Thiebaud, Hugh M., Vevay.
Copeland, R. M., Bennington.

SUSPENDED.

Douglas, Dilver E., E. Enterprise.

*Deceased.

TIPPECANOE COUNTY.

OFFICERS.

J. S. Morrison, President.
Wm. S. Campbell, Vice-Pres.
Wm. M. Reser, Secretary.
Chas. Hupe, Treasurer.
J. C. Webster, Delegate.

CENSORS.

J. D. Hillis.
Geo. F. Beasley.
C. C. Driscoll.

MEMBERS.

Baker, Erasmus S., West Point.
Baker, Ernest S., Lafayette.
Beasley, Geo. F., Lafayette.
Biddle, Frank M., Battle Ground.
Bitting, A. W., West Lafayette.
Campbell, Robt. M., West Point.
Campbell, W. S., Lafayette.
Davidson, E. C., Lafayette.
Driscoll, C. C., Lafayette.
Hillis, J. D., Lafayette.
Hopper, M. S., Lafayette.
Hupe, Chas., Lafayette.
Keiper, Geo. F., Lafayette.
Kern, Chas. B., Lafayette.
Lairy, M. M., Lafayette.
Levering, Guy P., Lafayette.
Lyle, Urba A., Lafayette.
McMahan, Adah, Lafayette.
Mitchell, Josephine M., Lafayette.
Moffit, Wm., West Lafayette.
Morrison, J. S., Lafayette.
Nesbitt, Wm. S., Monitor.
Peters, W. H., Lafayette.
Reser, Wm. M., Lafayette.
Revis, Geo. F., Lafayette.
Schreiber, A. Th., Lafayette.
Schulz, Herman S., Lafayette.
Tea, R. S., Lafayette.
Thompson, Frank, Lafayette.
Throckmorton, G. K., Lafayette.
Walker, Wm. S., Lafayette.
Washburn, S. S., Lafayette.
Webster, J. C., Lafayette.
Westfall, A. B., Lafayette.
Wetherill, R. B., Lafayette.
Wilson, M. C., Lafayette.
Hannill, R. V.,* Lafayette.

* Deceased.

TIPTON COUNTY.

OFFICERS.

W. E. McKee, President.
H. E. Grishaw, Vice-Pres.
A. W. Gifford, Sec.-Treas.
M. V. B. Newcomer, Delegate.

CENSORS.

T. C. Cochran.
E. I. Hinkle.
T. W. Longfellow.

MEMBERS.

Cochran, T. C., Sharpsville.
Dickey, A. S., Tipton.
Doan, N. W., New Lancaster.
Grishaw, H. E., Tipton.
Gifford, A. W., Tipton.
Hinkle, E. I., Goldsmith.
Longfellow, T. W., Tipton.
McKee, W. E., Tipton.
Newcomer, M. V. B., Tipton.
Ploughe, M. T., Kempton.
Read, H. G., Tipton.

SUSPENDED.

Chance, B. V., Windfall.

UNION COUNTY.

OFFICERS.

Garrett Pigman, President.
Franklin T. Dubois, Vice-Pres.
E. R. Beard, Sec.-Treas.

MEMBERS.

Morris, J. E., Liberty.
Pigman, Garrett, Liberty.
Kell, S. D., Liberty.
Beard, E. R., Liberty.
Dubois, Franklin T., Liberty.
Veraker, M. F., Kitchell.
Hawley, W. H., College Corner.

VANDERBURGH COUNTY.

OFFICERS.

B. W. L. Floyd, President.
J. N. Baughman, Vice-Pres.
W. R. Davidson, Sec.-Treas.
Edwin Walker, Delegate.

CENSORS.

B. W. L. Floyd.
Edwin Walker.
G. W. Varner.

MEMBERS.

Achilles, F. W., Evansville.
Bacon, C. P., Evansville.
Baughman, J. N., Evansville.
Begley, B. W., Inglefield.
Berger, E. V., Howell.
Binkley, J. F., Evansville.
Bitz, L. B., Evansville.
Boyden, C. F., Evansville.
Brose, L. D., Evansville.
Bryan, T. L., Evansville.
Busse, E. P., Evansville.
Cain, D. B., Evansville.
Cleveland, W. F., Evansville.
Coleman, W. H., Evansville.
Cottingham, I. E., Evansville.
Cox, D. A., Howell.
Davidson, W. R., Evansville.
Davis, F. L., Evansville.
Dixon, H. F., Evansville.
Duddenhausen, W. C., Evansville.
Eichel, S. J., Evansville.
Field, W. H., Evansville.
Floyd, B. W. L., Evansville.
Frick, H. C., Evansville.
Fritsch, W. A., Evansville.
Fritsch, L. J., Evansville.
Gilbert, W. H., Evansville.
Glover, J. F., Evansville.
Greenleaf, G. F., Evansville.
Harpole, C. B., Evansville.
Hartloff, C. W., Evansville.
Hayden, A. M., Evansville.
Heberer, J. M., Evansville.
Heimann, L., Evansville.
Hodson, G. P., Evansville.
Hudson, M. D., Evansville.
Huber, J. G., Evansville.
Ingle, C. V., Evansville.
Jerome, J. N., Evansville.
Kelsay, C., Evansville.
Kerth, J. H., Evansville.
Knapp, A. J., Evansville.
Knapp, B. J., Evansville.
Knapp, Chas., Evansville.
Jones, Geo. E., Evansville.
Laubscher, S. J., Evansville, R. R.
Laughlin, C. E., Evansville.
Laval, W. J., Evansville.
Linthicum, E., Evansville.
Lorenz, J. W., Evansville.
McCool, H. F., Evansville.
McCool, W. E., Evansville.
McClurkin, J. C., Evansville.
McCutchan, J. H., Evansville.
McCoy, P. Y., Evansville.
Macer, Thos., Evansville.
Nenneker, E. H., Evansville.
Owen, J. E., Evansville.
Phares, J. W., Evansville.
Pollard, W. S., Evansville.

Ravdin, M., Evansville.
Reavis, W. J., Evansville.
Rietz, P. C., Evansville.
Rose, B. S., Evansville.
Sessions, S. K., Evansville.
Stark, J. W., Evansville, R. R.
Taylor, T. H., Evansville.
Tepe, G. W., Evansville.
Thomas, James, Evansville.
Tweedall, D. G., Evansville.
Varner, G. W., Evansville.
Varner, W. T., Evansville.
Verwayne, E. J., Evansville.
Viehe, C. G., Evansville.
Viehe, C. H., Evansville.
Warter, Philip, Evansville.
Walker, Edwin, Evansville.
Weever, J. B., Evansville.
Welborn, J. Y., Evansville.
Wertz, T., Evansville.
Willis, J. H., Evansville.
Witting, A. P., Evansville.
Worsham, L., Evansville.
Young, G. M., Evansville.
Pritchett, W. S., Evansville.

HONORARY.

Compton, J. W., Evansville.
Day, B. J., Evansville.
Mulhausen, M., Evansville.
Ralston, W. G., Evansville.
Schuyler, P. L., Evansville.

REMOVED.

Cantrall, Frances, Evansville.

WITHDRAWN.

Wilton, I., Evansville.
Nanney, W. N., Evansville.

VERMILLION COUNTY.

OFFICERS.

M. L. Hall, President.
W. P. Darroch, Vice-Pres.
O. M. Keyes, Sec.-Treas.
I. M. Casebeer, Delegate.

CENSORS.

Paul H. Keyes.
I. M. Casebeer.
S. C. Darroch.

MEMBERS.

Hall, M. L., Newport.
Wallace, Jas., Newport.
Casebeer, I. M., Newport.
Keyes, O. M., Dana.
Keyes, P. H., Dana.
Tucker, G. W., Dana.
Newhouse, O. A., Hillsdale.
Newton, J. T., St. Bernice.
Darroch, W. P., Cayuga.
Darroch, S. C., Cayuga.

VIGO COUNTY.

OFFICERS.

F. E. Wiedemann, President.
M. R. Combs, Vice-Pres.
Rudolph Yung, Sec.-Treas.
W. R. Mattox, Delegate.

CENSORS.

W. R. Mattox.
T. W. Moorhead.
B. V. Caffee.

MEMBERS.

Aikman, E. A., Clinton.
Bell, W. E., Terre Haute.
Belt, Richard, West Terre Haute.
Bernheimer, H. L., Terre Haute.
Bohn, J. C., Terre Haute.
Boor, M. A., Terre Haute.
Breaks, Z. L., Terre Haute.
Brown, T. F., Sanford.
Brunker, Jas., Riley.
Cabell, A. L., Terre Haute.
Caffee, B. V., Terre Haute.
Combs, C. N. Terre Haute.

Combs, M. R., Terre Haute.
Cooper, J. A., Terre Haute.
Crapo, G. W., Terre Haute.
Crapo, Jno. R., Terre Haute.
DuPuy, Chas., Riley.
Drake, Jas. F., Youngstown.
English, J. P., Terre Haute.
Fortune, J. G., Burnett.
Frisz, Jos., Terre Haute.
Gerrish, W. D., Clinton.
Hawkins, Madge P., Terre Haute.
Hebble, D. W., Terre Haute.
Hemphill, F. M., Seelyville.
Hunt, John S., West Terre Haute.
Jenkins, W. O., Terre Haute.
Keys, O. M., Dana.
La Bier, C. R., Terre Haute.
Laughead, J. T., Terre Haute.
Leavitt, R. H., Terre Haute.
Layman, E. W., Terre Haute.
Luckett, L. P., Terre Haute.
Mapes, W. L., Terre Haute.
Mattox, W. R., Terre Haute.
McAllister, E. B., Terre Haute.
McCall, James, Terre Haute.
McJohnston, W. E., Terre Haute.
McClain, Leslie, Terre Haute.
Moorhead, T. W., Terre Haute.
Mullikin, H. M., Terre Haute.
Neal, E. M., Edwards.
Newhouse, O. A., Hillsdale.
Newton, G. O., Dana.
Niblack, E. S., Terre Haute.
Nichols, John, Atherton.
Patton, Chas., Terre Haute.
Ray, C. C., Sanford.
Rice, S. M., Terre Haute.
Schell, Walker, Terre Haute.
Shaley, F. W., Terre Haute.
Sibley, L. H., Terre Haute.
Smick, C. M., Terre Haute.
Spigler, O. R., Terre Haute.
Stunkard, T. C., Terre Haute.
Tabor, F. A., Terre Haute.
Vancleave, M. B., Terre Haute.
Weinstein, Joseph, Terre Haute.
Weinstein, Leo J., Terre Haute.
Wiedemann, F. E., Terre Haute.
Weir, S. D., Terre Haute.
Willien, L. J., Terre Haute.
Worrell, J. P., Terre Haute.
Wyeth, Chas., Terre Haute.
Young, S. J., Terre Haute.
Yung, Rudolph, Terre Haute.

WITHDRAWN.

Washburn, A. A., Clinton.

REMOVED.

Stephenson, C. E., Terre Haute.

WABASH COUNTY.

OFFICERS.

T. R. Brady, President.
John Kautz, Vice-President.
Walter A. Domer, Secretary.
R. F. Blount, Treasurer.
James Wilson, Delegate.

CENSORS.

B. A. Houser.
M. E. Renner.
P. J. Moore.

MEMBERS.

Ader, Henry, Somerset.
Andrews, Miss Leila, N. Manches'r.
Blount, R. F., Wabash.
Brady, T. R., Wabash.
Brodbeck, Geo. H., Roann.
Domer, Walter A., Wabash.
Blumer, F. H., Lagro.
Giffen, R. I., Lagro.
Hale, M. M., Wabash.
Hale, N. T., Wabash.
Houser, B. A., Wabash.
Hardman, W. E., No. Manchester.
Kitson, F. S., North Manchester.
Kern, Aaron, Wabash.
Lower, M. O., North Manchester.
Moore, P. J., Wabash.

Modricker, J. M., Wabash.
Mooney, H. C.,* Laketon.
Renner, M. E., Urbana.
Rodgers, A. E., Somerset.
Smith, L. W., Wabash.
Smith, L. F. J., Mrs., Wabash.
Shellhamer, D. C., Wabash.
Thompson, N. H., Wabash.
Wilson, James, Wabash.
Dicken, C. L., Lafountain.

HONORARY.

Ford, J. H., Indianapolis.
Kautz, John, Indianapolis.

REMOVED.

Williams, J. B., Wabash.

* Deceased.

WARRICK COUNTY.

OFFICERS.

W. A. Hewins, President.
W. H. Mills, Vice-Pres.
E. L. Youngblood, Sec.-Treas.
Dalton Wilson, Delegate.

CENSORS.

Thos. Wright.
J. H. Schuck.
N. M. Spradley.

MEMBERS.

Daily, W. W., Stanley.
DeForest, D. A., Boonville.
DeForest, D. F., Boonville.
Ford, W. P., Boonville.
Hewins, W. A., Chandler.
Hoover, P. N., Boonville.
Hoover, Guy, Boonville.
Hunt, W. A., Lynnville.
Keegan, C. J., Chandler, R. R. 20.
Lett, O. A., Newburg.
Mills, W. H., Boonville.
Mills, Mary, Princeton.
Schuck, John H., Chandler.
Spradley, N. M., Tennyson.
Taylor, U. T., Newburg.
Tyner, S. L., Boonville.
West, E. A., Folsomville.
Wilson, Dalton, Yankeetown.
Wilson, W., Yankeetown.
Wright, Thos., Boonville.
Youngblood, E. L., Boonville.
Springston, C. E., Selvin.
Taylor, E. C., Chandler, R. R. 20.
Scales, Harvey, Boonville.

WASHINGTON COUNTY.

OFFICERS.

W. J. Purkhiser, President.
L. W. Paynter, Vice-Pres.
W. C. Cauble, Sec.-Treas.
W. J. Purkhiser, Delegate.

CENSORS.

R. J. Wilson.
S. B. Howard.
J. J. Mitchell.

MEMBERS.

Bradshaw, A. E., Halo.
Cauble, Wm. C., Salem.
Green, Wm. L., Pekin.
Hobbs, H. C., Salem.
Howard, S. B., Kossuth.
Kelley, Jas. F., Livonia.
Mitchell, J. J., Canton.
Paynter, L. W., Campbellsburg.
Purkhiser, W. J., Salem.
Reed, A. A., Salem.
Spurgeon, Cornelius, Kossuth.
Sturdevant, M. G., Chestnut Hill.
Wilson, R. J., Salem.
Duff, J. F. H., Campbellsburg.
Barnett, Otho, Salem.

HONORARY.

Bare, John R., Salem.
Oatley, J. H., New Philadelphia.

WAYNE COUNTY.

OFFICERS.

S. C. Markley, President.
J. N. Study, Vice-Pres.
D. W. Stevenson, Sec.-Treas.
M. F. Johnston, Delegate.

CENSORS.

M. F. Johnston.
Ch. Marvel.
H. B. Boyd.

MEMBERS.

Allen, J. B., Cambridge City.
Bond, C. S., Richmond.
Bowers, L. G., Richmond.
Boyd, H. B., Cambridge City.
Bradley, J. P., Abington.
Bramkamp, A. L., Richmond.
Bulla, Joseph M., Richmond.
Clark, J. B., Economy.
Colburn, C. P., Richmond.
Davis, T. H., Richmond.
Dunham, F. H., Richmond.
Ewing, U. B. G., Richmond.
Fouts, J. M., Centerville.
Gabel, H., Centerville.
Gentle, L. M., Milton.
Grant, G. H., Richmond.
Griffis, W. T., Fountain City.
Haughton, R. E., Richmond.
Helms, W. M., Williamsburg.
Hervey, Minnie E., Richmond.
Hopkins, R. R., Richmond.
Huff, O. N., Fountain City.
Huffman, W. G., Richmond.
Jenkins, Jennie, Richmond.
Johnston, M. F., Richmond.
Kienzle, F. W., Greensfork.
King, J. E., Richmond.
Krueger, F. W., Richmond.
Littell, W. R., Cambridge City.
Loop, A. L., Economy.
Markley, S. C., Richmond.
Marvel, C., Richmond.
Mauk, J. R., Cambridge City.
McKee, C. A., Dublin.
Meek, J. B., Richmond.
Meek, M. L., Abington.
Mendenhall, W. O., Richmond.
Morrow, S. J., Richmond.
Norrell, J. R., Richmond.
Roark, C. A., Milton.
Smith, S. E., Richmond.
Schillinger, R., Richmond.
Stevenson, D. W., Richmond.
Stotlemyer, C. I., Hagerstown.
Study, J. N., Cambridge City.
Sweeney, I. F., Milton.
Walton, G. F., Dublin.
Wampler, J. M., Richmond.
Weist, H. H., Richmond.
Wright, Jacob E., Cambridge City.
Weller, J. E., Richmond.
Yencer, M. W., Boston.
Young, Franklin, Centerville.
Watts, E. K.,* Richmond.

REMOVED.

Angle, J. K., Richmond.

SUSPENDED.

Mottier, G. A., Richmond.

*Deceased.

WELLS COUNTY.

OFFICERS.

Louis Severin, President.
Fred Metts, Vice-Pres.
I. N. Hatfield, Sec.-Treas.
L. A. Spaulding, Delegate.

CENSORS.

J. C. Fulton.
I. N. Hatfield.
M. N. Newman.

MEMBERS.

Botts, E. H., Zanesville.
Blue, C. L., Tocsin.
Cook, L. H., Bluffton.
Dyer, E. W., Ossian.
Doster, Hezekiah, Poneto.
Fulton, John C., Bluffton.
Fulton, Geo. E., Bluffton.
Garrett, F. W., Liberty Center.
Goodin, S. A., Bluffton.
Hatfield, I. N., Bluffton.
Mason, L., Bluffton.
Metts, J. I., Ossian.
Metts, A. H., Ossian.
Metts, Fred, Ossian.
McKinney, J. W., Bluffton.
Morris, Thos., Mt. Zion.
Markley, H. W., Petroleum.
Newman, M. N., Ossian.
Spaulding, L. A., Bluffton.
Shoemaker, S. A., Poneto.
Severin, Louis, Bluffton.
Cheney, V. S., Bluffton.

WHITE COUNTY.

OFFICERS.

Robt. J. Clark, President.
James L. Carr, Vice-Pres.
A. B. Cray, Sec'y.
M. T. Didlake, Treasurer.
A. B. Cray, Delegate.

CENSORS.

Walter McBeth.
R. M. Reagan.
C. F. Cronk.

MEMBERS.

Carr, James L., Monon.
Cray, Arthur B., Monticello.
Cronk, C. F., Wolcott.
Clayton, Geo. R., Monon.
Clark, Robt. J., Monticello.
Didlake, M. T., Monticello.
McBeth, Walter, Burnettsville.
Minnick, Horace R., Idaville.
Medaris, John W., Brookston.
Reagan, R. M., Monon.
Spencer, Wm. A., Wolcott.
Washburn, P. E., Buffalo.
McCallister, J.,* Idaville.

SUSPENDED.

Walker, W. O., Wolcott.

REMOVED.

Reed, John H., Monticello.

*Deceased.

WHITLEY COUNTY.

OFFICERS.

O. V. Schuman, President.
F. G. Grisler, Secretary.

MEMBERS.

Linvill, D. S., Columbia City.
Schuman, O. V., Columbia City.
Grisler, F. G., Columbia City.
Kithcart, N. I., Columbia City.
Scott, W. C., Columbia City.
Squires, J. W., Churubusco.
Eberhard, E. L., South Whitley.
Magers, F. M., Churubusco.

SUSPENDED.

King, W. F., Columbia City.

ALPHABETICAL LIST OF MEMBERS.

[Names of former members deceased, withdrawn, removed or expelled, are omitted from the list. The Secretary will correct errors upon notification in the next issue.]

Abbott, Clarence, Otwell.
Abell, G. H., Sulphur.
Able, O. E., Trenton.
Achilles, F. W., Evansville.
Acker, M. M., Butler.
Adams, B. O., Eaton.
Adams, F. P., Elkhart.
Adams, Horace E., Harlan.
Adams, S. D., Brewersville.
Adams, Thos. J., North Salem.
Ader, Henry, Somerset.
Adye, C. H., Patronville.
Aikman, E. A. Clinton.
Ainsley, Robert, Indiana Harbor.
Alexander, H. H., Princeton.
Alexander, J. C., Indianapolis.
Alexander, J. H., Greensburg.
Alexander, L. E., Pendleton.
Alexander, W., Frankfort.
Allen, Ch. B., Fowler.
Allen, Horace R., Indianapolis.
Allen, Irvin O., Metamora.
Allen, J., Charlotteville.
Allen, J. B., Cambridge City.
Allen, Wesley, West Newton.
Allenbaugh, E. E., Huff.
Allhands, F. D., Wingate.
Ambrose, N. C., Lyons Station.
Amiss, J. M., Silver Lake.
Ammerman, C. E., Dugger.
Amy, W. E., Bicknell.
Amos, E. M., Indianapolis.
Anderson, J. W., Odon.
Anderson, R. S., Princeton.
Andrew, V. E., Indianapolis.
Andrews, E. H., Peru.
Andrews, George R., Muncie.
Andrews, J. R., River Vale.
Andrews, Lelia, N. Manchester.
Angell, C. E., Delphi.
Annis, E. L., Laporte.
Anthony, J. R., Indianapolis.
Arburn, Charles, Wadesville.
Armbruster, B. F., Columbus.
Armfield, T. O., Elwood.
Armington, John, Anderson.
Armstrong, Herman, Kewana.
Arthur, M. L., Patoka.
Arwine, J. S., Columbus.
Ash, E. E., Goshen.
Aspinwall, N. B., Plymouth.
Aspy, H. M., Geneva.
Atkinson, Curtis, Oxford.
Atkinson, J. M., Eaton.
Austin, Fred H., North Madison.
Austin, M. A., Anderson.
Axline, J. A., Noblesville.
Aydelotte, Thos., Lyons.

Bacon, C. F., Evansville.
Bacon, V. V., Michigan City.
Bahr, Max A., Indianapolis.
Bailey, G. D., Spiceland.
Bailey, H. T., Glezen.
Bare, A. W., Bryantsville.
Baker, Erasmus S., West Point.
Baker, Ernest S., Lafayette.
Baker, J. V., Harrodsburg.
Baker, R. E., Orleans.
Baldwin, S. J., Hortonville.
Ball, E. J., Valparaiso.
Ball, J. R., Lebanon.

Ball, L. L., Muncie.
Ball, T. Z., Waveland.
Ballard, Jos H., Indianapolis.
Banker, A. J., Columbus.
Banker, W. H., Columbus.
Barber, A. E., South Bend.
Barcus, P. J., Crawfordsville.
Barker, Joel T., Danville.
Barker, Thomas R., Danville.
Barnard, P. C., Oakville.
Barnes, Arthur L., Southport.
Barnes, C. A., Greenfield.
Barnes, G. O., Seymour.
Barnett, Charles E., Ft. Wayne.
Barnett, Otho, Salem.
Barnett, W. W., Ft. Wayne.
Barnfield, J. H., Logansport.
Barnhill, Jno. F., Indianapolis.
Barns, W. C., Marion.
Barrett, C. P., Oliver.
Bartholomew, A. C., Logansport.
Bartlett, C. G., Lewisville.
Bash, J. M., Warsaw.
Basinger, T. W., Petersburg.
Bastin, J. V., Greencastle.
Bates, J. M., Broad Ripple.
Batman, F. H., Bloomington.
Batman, W. F., Ladoga.
Baughman, J. N., Evansville.
Bauman, N. C., Wakarusa.
Baumgartner, O. C., Rockport.
Baxter, J. C., Auburn.
Baxter, J. W., Lanesville.
Beall, Charles G., Ft. Wayne.
Bear, L. H., Vevay.
Beard, E. R., Liberty.
Beard, Schuyler C., Vincennes.
Beasley, George F., Lafayette.
Beavers, Seth D., Decatur.
Beck, H. A., Indianapolis.
Beck, William S., Indianapolis.
Beckes, Norman E., Vincennes.
Beckett, G. A., Benham.
Becknell, I. J., Goshen.
Bedwell, T. S., Dugger.
Begley, B. W., Evansville.
Bell, E. Edwin, Ft. Wayne.
Bell, Guido, Indianapolis.
Bell, J. N., New Burlington.
Bell, W. E., Terre Haute.
Bell, William H., Logansport.
Belt, Richard, West Terre Haute.
Benedict, H., Springport.
Benham, Ch. W., Vincennes.
Benham, J. W., Columbus.
Bennett, J. B., Cannelton.
Berauer, J. M., Indianapolis.
Berger, E. V., Howell.
Bernheimer, H. L., Terre Haute.
Berner, Louis E., Indianapolis.
Berteling, J. B., South Bend.
Bethel, W. J., Winslow.
Bevier, Frank, Waterloo.
Bice, L. C., Columbus.
Biddle, F. M., Battle Ground.
Biery, T. E., Scottsburg.
Binkley, J. F., Evansville.
Birchfield, J. W., New Alsace.
Bird, Charles R., Indianapolis.
Bird, J. E., New Albany.
Bitting, A. W., West Lafayette.
Bitz, J. F., Evansville.
Black, F. W., Ligonier.
Black, Silas D., Brazil.
Blair, Frank, Princeton.
Blair, J. S., Lynn.
Blair, W. W., Princeton.
Bland, H. E., Fairbanks.
Blinks, E. G., Michigan City.
Bloom, H. G., Oxford.
Bloomer, F. H., Lagro.
Bloomfield, E. M., Peru.
Blossom, J. C., Mt. Summit.
Blount, R. D., Valparaiso.
Blount, R. F., Wabash.
Blount, R. T., Homer.
Blue, C. S., Tocsin.
Boersig, Jos. A., Indianapolis.
Boggs, M. M., Macy.
Bohn, J. C., Terre Haute.
Bolling, L. A., Attica.
Bond, C. S., Richmond.
Bond, Marc L., Aurora.
Boone, B. H., Boggstown.

Boor, M. A., Terre Haute.
Boor, W. F., New Castle.
Boram, E. V., Anderson.
Boren, S. W., Poseyville.
Borley, E. R., South Bend.
Borley, W. E., Mishawaka.
Borton, T. Artemus, Plymouth.
Botkin, C. L., Winchester.
Botts, E. H., Zanesville.
Bottorff, John C., Corydon.
Bounell, H. M., Waynetown.
Bounell, T. A., Jamestown.
Bowell, B. O. Carr, Laporte.
Bowen, J. F., Occident.
Bower, G. B. M., Ft. Wayne.
Bower, Jno. V., Malott Park.
Bowers, L. G., Richmond.
Bowers, Whitfield, Michigan City.
Bowker, Jas. J., Laotto.
Bowlby, Jos., Shelbyville.
Bowles, H. S., Muncie.
Boyd, C. E., West Baden.
Boyd, C. L., Paoli.
Boyd, C. L., Vincennes.
Boyd, H. B., Cambridge City.
Boyden, C. F., Evansville.
Boyden, W. H., Anderson.
Boyers, James S., Decatur.
Brackney, M. F., Mooresville.
Bradley, J. P., Abington.
Bradfield, Jno., Logansport.
Bradley, J. S., Hall.
Bradshaw, A. E., Halo.
Brady, T. R., Wabash.
Bramkamp, A. L., Richmond.
Brandon, W. S., Daleville.
Brannon, Charles D., Crown Point.
Brannock, B. B., Jasper.
Braxtan, T. N., Loogootee.
Brayton, A. W., Indianapolis.
Brayton, N. D., Indianapolis.
Breaks, L. Z., Terre Haute.
Breedlove, G. B., Brooklyn.
Brendell, John F., Zionsville.
Brent, I. N., Jamestown.
Bretz, Arthur G., Indianapolis.
Briggs, C. F., Sullivan.
Brill, Jas. H., Indianapolis.
Brittain, S. H., Loogootee.
Brodbeck, George H., Roann.
Brokaw, R. E., Portland.
Brose, L. D., Evansville.
Brothers, G. M., New Paris.
Broughton, F. A., Waterloo.
Broughton, F. H., Wolcottsville.
Brown, Archibald, Rochester.
Brown, A. L., Alamo.
Brown, A. S., Paragon.
Brown, Benj. A., Indianapolis.
Brown, Charles A., Plymouth.
Brown, E. A., Indianapolis.
Brown, H. M., Indiana Harbor.
Brown, J. R., Sumption Prairie.
Brown, L. E., Ft. Wayne.
Brown, S. I., Knox.
Brown, T. F., Sanford.
Brownback, O. W., Pendleton.
Brucker, C. M., Tell City.
Brudi, G. G., New Haven.
Bruggeman, H. O., Ft. Wayne.
Bruner, C. K., Greenfield.
Bruner, Mary L., Greenfield.
Brunker, James, Riley.
Bryan, T. L., Evansville.
Buchanan, W. A., Hammond.
Buchman, A. P., Ft. Wayne.
Buchtel, I. O., Auburn.
Bucklin, G. W., Muncie.
Bulla, J. M., Richmond.
Bullitt, Thos. W., River Vale.
Bulson, Albert E., Jr., Ft. Wayne.
Burcham, H. C., Albany.
Burckett, C. W., Warsaw.
Burckhardt, Louis, Indianapolis.
Burley, David M., Vincennes.
Burlington, J. R., Attica.
Burr, T. S., South Bend.
Burroughs, J. P., Westport.
Burton, A. R., Princeton.
Bushaw, B. E., Marengo.
Busjahn, F. A., Logansport.
Busse, E. P., Evansville.
Butler, C. A., New Castle.
Butler, W. H., Columbus.

Butterworth, C. M., South Bend.
Button, C. E., Crown Point.
Buxton, Eva., Rockport.
Byers, O. A., Petersburg.
Byrns, J. D., Mitchell.

Cabell, A. L., Terre Haute.
Cady, N. W., Logansport.
Caffee, A. H., Hymera.
Caffee, B. V., Terre Haute.
Cain, D. B., Evansville.
Cain, Joseph D., Indianapolis.
Calvert, J. H., Milton, Ky.
Calvin, J. C., Ft. Wayne.
Calvin, W. D., Ft. Wayne.
Cameron, J. F., Hamilton.
Camp, W. E., Clarksville.
Campbell, Cyrus W., Hammond.
Campbell, Frank, Shelbyville.
Campbell, H. M., Westville.
Campbell, R. M., West Point.
Campbell, W. S., Lafayette.
Canfield, B. V., Indianapolis.
Caney, P. H., Vincennes.
Cannon, G. H., New Albany.
Cannon, J. H., South Bend.
Caplinger, C. A., Wallace.
Carey, W. W., Spencerville.
Carl, O. U., Peru.
Carlisle, P. G., East Connersville.
Carnes, Z., Greenwood.
Carney, C. E., Delphi.
Carpender, W. P., Akron.
Carr, James L., Monon.
Carson, J. C., Valparaiso.
Carson, L. O., Traders Point.
Carter, Amos, Plainfield.
Carter, Calvin, Brookville.
Carter, Laura, Shelbyville.
Carver, W. F., Albion.
Case, M. T., Attica.
Case, W. W., Zenas.
Casebeer, I. N., Newport.
Casebeer, J. B., Auburn.
Casper, John, Jasper.
Cauble, Wm. C., Salem.
Caylor, C. E., Pennville.
Cecil, A. A., Muncie.
Chafee, Wm. C., Huntington.
Chamberlin, Cameron, Indianapolis.
Chambers, B. F., Lyons.
Chambers, J. D., Ft. Wayne.
Chance, B. V., Windfall.
Chancellor, S. R., Kokomo.
Charles, Etta, Summitville.
Charlton, Fred. R., Indianapolis.
Cheney, V. S., Bluffton.
Chenoweth, F. A., Winchester.
Chenoweth, N. T., Windsor.
Childs, A. G. W., Madison.
Chittenden, E. W., Anderson.
Chittenden, G. F., Anderson.
Chittick, Andrew, Burlington.
Chittick, Charles, Frankfort.
Chitwood, John E., Connersville.
Christie, James H., Canaan.
Christian, Wilmer, Indianapolis.
Clapp, Fred R., Ligonier.
Clapper, Manton M., Hartford City.
Clark, C. S., Decatur.
Clark, D. D., Decatur.
Clark, E. D., Indianapolis.
Clark, J. B., Economy.
Clark, J. H., Connersville.
Clark, Joseph H., Princeton.
Clark, J. I., Owensville.
Clark, J. T., Hammond.
Clark, Robert J., Monticello.
Clark, S. A., South Bend.
Clayton, George R., Monon.
Cleveland, W. F., Evansville.
Clevenger, W. F., Indianapolis.
Cline, George F., Scottsburg.
Cline, Lewis C., Indianapolis.
Close, T. H., Scottsburg.
Clouse, Bertha A., Hope.
Cluthe, William, Tell City.
Coble, Jacob, Spencer.
Coble, Ralph, Spencer.
Cochran, R. W., Madison.
Cochran, T. C., Sharpsville.
Coffin, A., Carlos City.
Cohen, David, Jeffersonville.
Colburn, C. P., Richmond.

Cole, A. M., Indianapolis.
Cole, W. H., Switz City.
Coleman, J. W., Petersburg.
Coleman, W. H., Evansville.
Coleman, W. S., Rushville.
Collins, A. W., Anderson.
Collins, C. C., Roachdale.
Combs, C. N., Terre Haute.
Combs, M. R., Terre Haute.
Comstock, J. A., Greenfield.
Cone, Edmond, Valparaiso.
Conger, C. W., Indianapolis.
Conley, L. H., Gas City.
Connelly, H. M., Shelbyville.
Conrad, E. M., Anderson.
Conway, C. E., Perkinsville.
Cook, B. H., Anderson.
Cook, Charles J., Indianapolis.
Cook, Charles P., New Albany.
Cook, Clark, Fowler.
Cook, George J., Indianapolis.
Cook, J. A., Goshen.
Cook, J. W., Pendleton.
Cook, L. H., Bluffton.
Cook, P. M., Solsberry.
Cook, R. C. N., Boswell.
Coombs, David, Charlestown.
Cooper, A. M., Muncie.
Cooper, Ernest, Plainfield.
Cooper, J. A., Terre Haute.
Cooperider, J., Madison.
Copeland, Charles C., N. Madison.
Copeland, G. W., Moorefield.
Copeland, R. M., Bennington.
Corbin, E. M., Sullivan.
Corey, Charles W., Hartford City.
Corey, J. D., McCordsville.
Cornell, F., Galveston.
Cosby, George O., Burnsville.
Cosby, L. B., Cynthiana.
Costello, H. F., Decatur.
Cottingham, Chas. E., Indianapolis.
Cottingham, I. E., Evansville.
Coulson, S. B., Jackson Hill.
Courtney, Thomas E., Indianapolis.
Coverdale, Earl G., Decatur.
Coverdale, J. S., Decatur.
Covertson, J. W., Frankton.
Cowan, E. H., Crawfordsville.
Cowen, Lewis C., Rising Sun.
Cowing, H. A., Muncie.
Cox, C. E., Cannelton.
Cox, C. R., Lynn.
Cox, D. A., Howell.
Cox, Edgar, Kokomo.
Cox, J. B., Mt. Vernon.
Cox, J. G., Holton.
Cox, J. W., Bufkin.
Cox, L. T., Napoleon.
Cox, N. D., Spencer.
Craig, J. A. Greenwood.
Craig, T. E., Lawrenceburg.
Cramm, C. J., Fulda.
Crampton, Charles C., Delphi.
Crapo, G. W., Terre Haute.
Crapo, John R., Terre Haute.
Cravens, E. R., Linton.
Cravens, William R., Bloomfield.
Crawford, E. F. W., Hanna.
Crawford, G. S., Clifty.
Cray, Arthur B., Monticello.
Creel, T. J., Angola.
Cregor, F. W., Carthage.
Cremeans, W. C., Mt. Vernon.
Critchfield, J. S., Princeton.
Cromer, L. G., Union City.
Cromer, Mary, Union City.
Cronk, C. F., Wolcott.
Cronkhite, C. C., Marion.
Crose, Samuel E., Indianapolis.
Crouch, J. H., North Vernon.
Crouse, Henry W., Knightstown.
Crowder, J. R., Sullivan.
Crowder, R. H., Sullivan.
Crull, E. A., Ft. Wayne.
Crum, Claude C., Jeffersonville.
Crumrine, I. S. J., Landess.
Culbertson, Scott, Vevay.
Cullipher, J. E., Pendleton.
Cully, John F., Bainbridge.
Culmer, W. N., Bloomington.
Cummings, D. J., Ewing.
Cummings, D. J., Jr., Ewing.
Cummings, S. M., Elkhart.

Cunningham, H. L., Salem Center.
Cunningham, S. R., Indianapolis.
Current, O. E., Farmland.
Curtiss, W. H., Frankfort.
Cushman, A., Graysville.
Cushman, R. A., Princeton.

Dailey, J. M., Rockport.
Daily, W. W., Stanley.
Dale, B. C., Marion.
Dale, Omar E., Alquina.
Dancer, Charles R., Ft. Wayne.
Dancer, Chas. W., Stroh.
Daniel, William, Corydon.
Daniels, George, Marion.
Daniels, G. W., Sweetser.
Darby, A. B., Waterloo.
Darling, E. S., North Liberty.
Darroch, S. C., Cayuga.
Darroch, W. P., Cayuga.
Daugherty, C. A., South Bend.
Davenport, H. F., Hayden.
Davenport, William H., Vincennes.
Davidson, A. W., Brownsburg.
Davidson, E. E., Lafayette.
Davidson, J. F., Crawfordsville.
Davidson, W. R., Evansville.
Davis, C. P., Galena.
Davis, D. F., New Albany.
Davis, F. L., Evansville.
Davis, John Q., Indianapolis.
Davis, L. N., Farmland.
Davis, Royce, Decker.
Davis, T. H., Richmond.
Davis, W. M., Coal City.
Davisson, Henry C., Hartford City.
Dean, E. R., South Bend.
DeForest, D. A., Boonville.
DeForest, D. F., Boonville.
Defrees, H. J., Nappanee.
DeHass, T. W., Indianapolis.
DeLong, O. A., Azalia.
Deming, N. L., Ft. Wayne.
Demotte, Jerome, Odon.
Dennis, F. L., Crawfordsville.
Denny, Charles, Belleview.
Denny, George E., Madison.
Denson, H. A., Indianapolis.
Depew, E. W., Wolf Lake.
Deputy, E. M., Dugger.
De Tar, Geo. B., Winslow.
Derbyshire, E., Connersville.
DeVaney, Mitchell O., Indianapolis.
DeWeese, L., Hemlock.
Dewey, E. L., Hammond.
Dewey, F. N., Elkhart.
Dicken, C. L., Lafontaine.
Dickes, J. T., Portland.
Dickey, A. S., Tipton.
Didlake, M. T., Monticello.
Dieff, J. F. H., Campbellsburg.
Dierking, A. W., Oolitic.
Dilley, Fred C., Brazil.
Dillman, L. D., Connersville.
Dillinger, J. R., French Lick.
Dings, W. H., Mitchell.
Dinnen, James M., Ft. Wayne.
Dinsmore, Walter H., Kramer.
Dippell, Emil T., Huntington.
Diven, C. E., Anderson.
Dixon, H. F., Evansville.
Doan, W. W., New Lancaster.
Dobbins, A. O., Wheeler.
Dodds, W. T. S., Indianapolis.
Doerr, J. E., Mt. Vernon.
Dollens, T. C., Trinity Springs.
Dome, D. C., Troy.
Domer, W. A., Wabash.
Donaldson, A. I., Washington.
Donica, T. N., Tunnelton.
Dooley, A. J., Marion.
Dooley, M. M., Loogootee.
Dorsey, Francis O., Indianapolis.
Doster, Hezekiah, Poneto.
Douglas, Dilver E., E. Enterprise.
Dove, S. C., Westfield.
Downing, J. F., Yorktown.
Downing, J. R., Yorktown.
Downey, L. J., Vincennes.
Drake, Jas. F., Youngstown.
Drake, Morris, Shelbyville.
Drayer, L. P., Ft. Wayne.
Dresch, C. A., Mishawaka.
Drescher, Marie L., Michigan City.

Driscoll, C. C., Lafayette.
Druley, O. E., Anderson.
Dryer, D. W., Lagrange.
Dubois, F. T., Liberty.
Duddenhausen, W. C., Evansville.
Duemling, H. A., Ft. Wayne.
Dugan, Thos. J., Indianapolis.
Dugdale, R. B., South Bend.
Duncan, J. B., Bedford.
Duncan, Wm. F., Manchester.
Dunn, W. H., Gaston.
Dunlavey, I. E., Indianapolis.
Dunham, F. H., Richmond.
Dunning, L. H., Indianapolis.
Dupuy, Charles, Riley.
Durham, Charles O., Indianapolis.
Durham, J. L., Graysville.
Dutrow, C. E., Bristol.
Dyer, L. W., Ossian.

Eads, C. V., Ambia.
Earp, S. E., Indianapolis.
Eash, S. M., Shipshewana.
Easley, E. P., New Albany.
Eastman, F. P., South Bend.
Eastman, J. R., Indianapolis.
Eastman, T. B., Indianapolis.
Eberhard, E. L., South Whitley.
Eberhardt, W., Michigan City.
Eckelman, F. C., Elkhart.
Eckelman, M. M., Elkhart.
Edenharter, George F., Indianapolis
Edmonds, S. A., Goshen.
Edwards, C. H., Sullivan.
Eickel, S. J., Evansville.
Eidson, J. W., Bourbon.
Eikenberry, A. A., Peru.
Eisenbeiss, C. M., Elkhart.
Elder, Edward C., Logansport.
Eley, Lorenzo D., Plymouth.
Elfers, John, Rising Sun.
Elliott, H. H., Glenwood.
Elliott, J. W., Linden.
Elliott, R. H., Connersville.
Elrod, E. L., Henryville.
Elrod, M. N., Columbus.
Elrod, S. B., Raglesville.
Emery, C. H., Bedford.
Emmerl, E. J., Lawrenceburg.
Emmick, T. C., Mt. Vernon
Engleman, L. P., Reese Mill.
Englerth, P. O., North Judson.
English, C. H., Ft. Wayne.
English, J. P., Terre Haute.
Enslen, Wm. M., Ft. Wayne.
Ensminger, S. L., Crawfordsville
Epperson, Adah, South Bend.
Erdman, Bernhard, Indianapolis.
Eshelman, W. A., Anderson.
Essex, H. L., Alert.
Estes, J. W., Shelbyville.
Etter, J. R., Crawfordsville.
Evans, E. B., Greencastle.
Evans, H. M., Valparaiso.
Evans, Caleb S., Union City.
Evans, J. J., Winchester.
Evans, John M., Mellott.
Ewing, U. B. G., Richmond.

Fagaly, A. T., Lawrenceburg.
Fair, H. D., Muncie.
Fairfield, W. J., Anderson.
Faith, Abraham H., Washington.
Fankboner, W. A., Marion.
Farrabee, C. E., Indianapolis.
Farver, M. A., Middlebury.
Fattic, John B., Anderson.
Faulkner, Clara, Hobart.
Fenton, S. C., Boswell.
Ferguson, C. E., Indianapolis.
Ferguson, W. H., Brighton.
Fermier, P. G., Leesburg.
Fernald, W. J., Frankfort.
Ferrell, J. E., Eden.
Ferris, Edgar S., New Castle.
Fetzer, John E., Corydon.
Field, David L., Jeffersonville.
Field, W. H., Evansville.
Finch, Gilbert, Center Point.
Fink, H. A., South Bend.
Finley, George W., Brazil.
Finney, Charles J., Attica.
Fisher, A. L., Elkhart.
Fisher, Benj. T., Spencer.

Fisher, E. S., Markle.
Fisher, J. M., Lapel.
Fitch, A. P., Lebanon.
Fitzpatrick, B., Columbus.
Fleming, J. C., Elkhart.
Fletcher, C. I., Indianapolis.
Fletcher, W. B., Indianapolis.
Floyd, Benj. L. W., Evansville.
Flucks, Carl, St. Wendell.
Flynn, E. N., Jeffersonville.
Flynn, Wm., Marion.
Fodrea, Z. H., Westfield.
Ford, J. H., Indianapolis.
Ford, Katherine C., Indianapolis.
Ford, O. P. M., Rising Sun.
Ford, W. P., Boonville.
Forester, Dr., Delaware.
Forry, Benj. F., Bath
Fortune, J. G., Burnett.
Foster, John H., Wolcottville.
Foust, P. G., Santa Fe.
Fouts, J. M., Centerville.
Fox, Henry A., Gosport.
Fox, R. H., Freelandsville.
Foxworthy, Frank W., Indianapolis.
Francis, E. T., Columbus.
Francis, W. R., Marion.
Franks, H. P., Muncie.
Franks, O. P., Brimfield.
Franks, W. H., Ligonier.
Frazer, Charles, Muncie.
Freeland, John L., Indianapolis.
Freeland, John T., Bedford.
Freeman, E. D., Osgood.
Freeman, G. M., Shoals.
Freeman, James, Sullivan.
Fretz, J. C., Deedsville.
Frick, H. C., Evansville.
Friermood, E. K., Greentown.
Frink, C. W., Elkhart.
Frisz, Joseph A., Terre Haute.
Fritsch, L. J., Evansville.
Fritsch, W. A., Evansville.
Frost, R. F., Huntington.
Fry, Chas. W., Huntington.
Fry, B. C., Indianapolis.
Fulkerson, C. D., Belle Union.
Fuller, W. H., North Vernon.
Fullinwider, C. H., Mt. Vernon.
Fulton, Dudley, South Bend.
Fulton, George E., Bluffton.
Fulton, John C., Bluffton.
Funk, Austin, New Albany.
Funk, C. C., New Albany.
Funk, Z. T., Corydon.
Furniss, S. A., Indianapolis.

Gabe, Harry E., Indianapolis.
Gabel, H., Centerville.
Gaddy, O., Paris Crossing.
Galbreth, W. H., Rockfield.
Galloway, N. G., South Bend.
Gantz, Thos., Freedom.
Garber, J. B., Dunkirk.
Gard, O., Frankfort.
Garner, C. A., Kendallville.
Gardner, Fletcher, Bloomington.
Gardner, Lucy W., Bloomington.
Garey, Dumont, New Albany.
Garr, J. O., Kokomo.
Garrett, F. W., Liberty Center.
Garretson, W. M., Perkinsville.
Garshweiler, Wm. P., Indianapolis.
Garstang, R. W., Indianapolis.
Geary, J. K., Ft. Wayne.
Gemmill, H. C., Indianapolis.
Gentle, L. M., Milton.
Gerard, R. H., Crawfordsville.
Gerrish, M. F., Seymour.
Gerrish, W. D., Clinton.
Gers, Henry, Washington.
Gibbons, G. L., Huron.
Gibbons, J. A., Mitchell.
Gibbs, Charles Milo, Greenfield.
Gibbs, J. C., Crown Point.
Gibson, J. J., Alexandria.
Giffen, R. I., Lagro.
Gifford, A. W., Tipton.
Gifford, Jos. C., Brazil.
Gilbert, J. L., Logansport.
Gilbert, Joseph L., Kendallville.
Gilbert, W. H., Evansville.
Gillespie, C. E., Crothersville.
Gillespie, J. T., Reelsville.

Giltner, Harry A., Mathews.
Gillum, W. H., Rockville.
Glaze, J. M., New Harmony.
Glover, John F., Evansville.
Goar, C. S., Indianapolis.
Gobble, F. R., English.
Goebel, William, Elkhart.
Good, A. H., Selma.
Good, Charles H., Warren.
Goodin, S. A., Bluffton.
Goodrich, C. D., Elkhart.
Goodwin, C. B., Kendallville.
Gordin, S. E., Alquina.
Gordon, Charles W., Ft. Wayne.
Gordon, E. R., Hobart.
Goshorn, Leonard, Hymera.
Goss, M., Rockville.
Gould, C. E., Rochester.
Gould, S. W., Argos.
Graessle, G. G., Seymour.
Graham, Alois B., Indianapolis.
Graham, Hannah, Indianapolis.
Graham, Nathan P., Madison.
Graham, Oliver P., Jeffersonville.
Graham, W. B., Noblesville.
Grant, G. E., Marengo.
Grant, G. H., Richmond.
Gravis, C. M., Martinsville.
Gray, J. L., Laporte.
Gray, Jno. W., Bloomfield.
Grayston, B. W. B., Huntington.
Grayston, Charles E., Huntington.
Grayston, Fred W., Huntington.
Green, D. M., Muncie.
Green, E. V., Martinsville.
Green, G. R., Muncie.
Green, J. H., North Vernon.
Green, F. H., Rushville.
Green, Thomas C., Albion.
Green, T. G., Shelbyville.
Green, W. F., Shelbyville.
Green, William L., Pekin.
Green, W. T., Albion.
Greenawalt, G. L., Ft. Wayne.
Greene, Henry E., Crawfordsville.
Greene, J. B., Mishawaka.
Greenleaf, G. F., Evansville.
Greenleaf, H. A., Markland.
Greenwell, F., Huntertown.
Gregory, Henry, Laurel.
Greist, H. W., New Castle.
Griebel, Herman, Ft. Wayne.
Griffis, W. T., Fountain City.
Griffith, M. J., Crawfordsville.
Griffith, T. J., Crawfordsville.
Grim, Geo. B., Oaktown.
Grim, Simon, Caborns.
Grishaw, H. E., Tipton.
Grisier, F. G., Columbia City.
Griswold, E. H., Peru.
Gronendyke, O. J., New Castle.
Gronendyke, T. W., New Castle.
Gross, W. O., Ft. Wayne.
Grubb, Albert G., Mongo.
Gudgel, J. E., Cynthiana.
Gwaltney, S. P., Midway.

Hackleman, F. G., Rushville.
Hadley, James W., Rossville.
Hager, W. A., South Bend.
Haggerty, R. I., Elkhart.
Hale, M. M., Wabash.
Hale, N. T., Wabash.
Habermal, Clara L., Corydon.
Hall, J. E., Alexandria.
Hall, H. J., Franklin.
Hall, H. M., Millersburg.
Hall, Jos., Logansport.
Hall, J. W., Portland.
Hall, M. L., Newport.
Hall, Silas, Vincennes.
Hall, T. J., Grafton.
Hallanan, Joseph A., Logansport.
Hannell, R. V., Lafayette.
Hamilton, A. A., Marion.
Hamilton, A. N., Waynetown.
Hamilton, E. Everett, Connersville.
Hamilton, N. C., Kokomo.
Hamilton, S. N., Connersville.
Hammersley, W. L., Frankfort.
Hammond, A. K., Ft. Wayne.
Hammond, G. B., English.
Hampton, S. E., Milton, Ky.
Hancock, C. F. C., Jeffersonville.

Hanna, L. M., Greencastle.
Hansel, C. A., Lakeville.
Hardesty, J. C., New Castle.
Hardman, W. E., N. Manchester.
Hardwick, R. L., Mt. Vernon.
Hardy, J. S., Lebanon.
Hargis, W. T., Derby.
Harper, J. A., Shelburn.
Harpole, C. B., Evansville.
Harris, C. E., Bloomington.
Harris, Cyrus M., Bourbon.
Harris, J. E., Bloomington.
Harrison, W. H., Kokomo.
Harrod, N., Tampico.
Harrold, E. O., Marion.
Harter, Harry, Newtonville.
Harter, J. H., Anderson.
Harter, W. P., Anderson.
Hartloff, C. W., Evansville.
Hartsock, W. B., Waverly.
Harvey, Jesse B., Indianapolis.
Haslep, Marie, Indianapolis.
Hassenmiller, M., West Baden.
Hatfield, I. N., Bluffton.
Hatfield, J. F., Moran.
Hauenstein, G. W., Elkhart.
Haughton, R. E., Richmond.
Havice, S. H., Ft. Wayne.
Hawes, James K., Clifford.
Hawkins, E., Greencastle.
Hawkins, Madge P., Terre Haute.
Hawkins, Robert W., Brazil.
Hawley, W. H., College Corner.
Hawn, C. E., Little York.
Haworth, M. C., Noblesville.
Hayden, A. M., Evansville.
Hayden, David N., Vevay.
Hayes, John W., Albion.
Hays, Franklin W., Indianapolis.
Hays, T. A., Burns City.
Hazel, James T., Freedom.
Hazelwood, F. W., New Albany.
Hazelwood, Green, Chambersburg.
Hazelwood, John, New Albany.
Hazzlewood, G. R., English.
Heath, Frederic C., Indianapolis.
Hebble, D. G., Terre Haute.
Heberer, J. M., Evansville.
Heimann, L., Evansville.
Held, Henry W., Vincennes.
Heller, Fred, Brownstown.
Heller, Oscar, Greenfield.
Helm, Charles J., Peru.
Helms, W. M., Williamsburg.
Hemphill, F. H., Seeleyville.
Henderson, Samuel, St. Phillipps.
Hendershot, C. T., Cannelton.
Hendricks, W. E., Martinsville.
Hendrickson, A. M. D., Magnet.
Henley, A., Fairmount.
Henry, W. C., Aurora.
Henson, Theo., Martinsville.
Herbert, Leo H., Indianapolis.
Herr, Henry, Washington.
Herrmann, Arthur J., Logansport.
Herrmann, Franz J., Logansport.
Hershey, F. C., Carmel.
Hershey, K. C., Carmel.
Hervey, Minnie E., Richmond.
Hess, F. C., Cadiz.
Hess, J. N., New Marion.
Hess, M. M., Morristown.
Hessler, Robert, Logansport.
Hetherington, J. P., Logansport.
Hetrick, J., Ft. Wayne.
Heusler, Ernest C., Howell.
Hewins, W. A., Chandler.
Hewitt, H. S., Mishawaka.
Hiatt, J. E., New Castle.
Hibbs, Irwin, Martinsville.
Hickman, C. C., Yeoman.
Hicks, C., Mt. Vernon.
Hicks, J. C., Napoleon.
Hicks, J. L., Arcadia.
Hicks, Jas. M., Huntington.
Hicks, L. F., Stilesville.
Higgins, J. B., Peru.
Hill, F. E., Muncie.
Hill, G. S., South Bend.
Hill, Henry B., Logansport.
Hill, J. W., South Bend.
Hill, L. B., Seymour.
Hillis, J. D., Lafayette.
Hines, F. M., Auburn.

Hines, W. L., Warsaw.
Hinkle, E. I., Goldsmith.
Hinshaw, O. W., Lynn.
Hoadley, W. J., Danville.
Hoag, W. I., Indianapolis.
Hoagland, C. S., Milroy.
Hobbs, H. C., Salem.
Hobbs, Alice L., Indianapolis.
Hobday, W. A., Ohio Falls.
Hodges, E. F., Indianapolis.
Hodges, Fletcher, Indianapolis.
Hodson, Geo., Evansville.
Hoffman, G. E., Rochester.
Hoggatt, W. W., French Lick.
Holder, R. E., Columbus.
Holder, Union H., Washington.
Holland, G. F., Bloomington.
Holland, P. C., Bloomington.
Hollenbeck, B. W., Westville.
Hollingsworth, A. S., Goshen.
Hollingsworth, Ernest, Washington.
Hollingsworth, M. P., Princeton.
Hollingsworth, S. G., Brazil.
Hollis, Ella A., Hartford City.
Hollis, Samuel, Hartford City.
Hollis, Wm. Allen, Hartford City.
Holliday, D. A., Fairmount.
Holloway, Marie L., Decatur.
Holloway, O. E., Knightstown.
Holloway, W. A., Logansport.
Holmes, Ella Sullivan, Aurora.
Holly, A. C., Attica.
Holton, William, New Harmony.
Holtzendorff, A. C., Plymouth.
Holtzendorff, C. F., Plymouth.
Holtzendorff, H., Mishawaka.
Holtzman, Rice C., Stinesville.
Hood, Thomas C., Indianapolis.
Hoopingarner, G. B., Elkhart.
Hoover, Guy, Boonville.
Hoover, L., Decker.
Hoover, P. N., Boonville.
Hope, C. F., Coatsville.
Hopkins, R. R., Richmond.
Hopper, M. S., Lafayette.
Horn, A. H., Putnamville.
Horne, W. N., Anderson.
Hornocker, S. D., Silverville.
Horrom, G. W., Hatfield.
Hoskins, G. H., Whiting.
Hoskins, Walter D., Indianapolis.
Hosman, W. E., Akron.
Hostetler, A. J., Shipshewana.
House, G. H. F., Indianapolis.
House, Jno. W., Indianapolis.
Houser, B. A., Wabash.
Howard, J. L., West Baden.
Howard, Noble P., Greenfield.
Howard, S. B., Kossuth.
Howat, W. F., Hammond.
Howes, Jas. W., Bowling Green.
Howerth, Cora, Valparaiso.
Huber, J. G., Evansville.
Hudelson, L. R., Milroy.
Hudson, M. D., Evansville.
Huff, O. N., Fountain City.
Huffman, W. G., Richmond.
Hughes, W. L., Indiana Harbor.
Hughes, Wm. F., Indianapolis.
Humphreys, F. B., Angola.
Hunt, B. S., Winchester.
Hunt, F. P., Leipsic.
Hunt, John S., W. Terre Haute.
Hunt, Lee F., Anderson.
Hunt, Stephen, Plainfield.
Hunt, Tighlman, Plainfield.
Hunt, W. A., Lynnville.
Hunter, F. S., Bedford.
Hunter, John R., Huntington.
Hunter, W. M., Petersburg.
Hupe, Charles, Lafayette.
Hurst, E. M., Cloverdale.
Hurt, G. K., Thorntown.
Hurty, John N., Indianapolis.
Hutcheson, W. R., Greencastle.
Hutchings, B. F., Crawfordsville.
Hutchings, B. M., Crawfordsville.
Hutchings, F. F., Indianapolis.
Hyde, L. A., Linton.
Hylton, A. J., Mooresville.

Ihrig, F. M., Goshen.
Imel, E. S., Petersburg.
Ingle, C. V., Evansville.

Inks, J. S., Nappanee.
Inlow, G. I., Blue Ridge.
Inlow, I. N., Blue Ridge.
Ireland, G. L., Winslow.
Irwin, A. J., Port Huron, Mich.
Ivey, D. R., La Crosse.

Jackson, C. M., Springville.
Jackson, F. G., Muncie.
Jackson, J. H., Pleasantville.
Jaeger, A. S., Indianapolis.
James, Oliver, Cory.
Jameson, Henry, Indianapolis.
Jaquith, O. S., Lawrenceburg.
Jay, M. T., Portland.
Jeffries, H. S., Upland.
Jeffries, W. E., Indianapolis.
Jenkins, Jennie, Richmond.
Jenkins, J. M., Cortland.
Jenkins, J. R., Boggstown.
Jenkins, W. O., Terre Haute.
Jennings, W. L., Bridgeport.
Jerome, J. N., Evansville.
Jessup, Maria A., Friendswood.
Jobes, N. E., Indianapolis.
Johnson, A. R., Atwood.
Johnson, David E., Moore's Hill.
Johnson, H., Newpoint.
Johnson, J. J., Sulphur.
Johnson, J. E., Marion.
Johnson, L. B., Ireland.
Johnson, Luther, Bourbon.
Johnson, O. B., Lizton.
Johnson, Sherman A., Tippecanoe.
Johnson, W. A., Wawaka.
Johnson, W. H., Brightwood.
Johnston, A., Akron.
Johnston, M. A., Oaktown.
Johnston, M. F., Richmond.
Johnston, S. A., Indianapolis.
Jolly, J. C., Lake.
Jones, A. B., Lebanon.
Jones, Cadwalader, Charlestown.
Jones, George E., Evansville.
Jones, H., Ober.
Jones, H. E., Anderson.
Jones, J. G., Versailles.
Jones, Jesse M., Cataract.
Jones, O. H., Crawfordsville.
Jones, Oscar, Jolietville.
Jones, P. W., Ober.
Jones, Rilus E., Clayton.
Jones, T. M., Anderson.
Jump, S. G., Selma.
Justice, Wm. A., Greenfield.

Kahlo, Geo. D., Indianapolis.
Kahn, David L., Indianapolis.
Kalbfleisch, A. H., Peru.
Kamman, G. H., Seymour.
Kamman, H. H., Columbus.
Kane, Alfred, Ft. Wayne.
Kaple, J. D., South Bend.
Kaszer, Jacob, Plymouth.
Kautz, John, Wabash.
Keegan, C. J., Chandler.
Keegan, E. W., Crawfordsville.
Kecling, J. E., Waldron.
Keene, T. V., Indianapolis.
Keeney, B. G., Shelbyville.
Keiper, G. F., Lafayette.
Kell, S. D., Liberty.
Keller, F. G., Alexandria.
Keller, H. E., Decatur.
Kelley, J. N., Westville.
Kelley, James F., Livonia.
Kelly, J. C., Mitchell.
Kelly, L. H., Hammond.
Kelsay, C., Evansville.
Kelsey, A. J., Monterey.
Kelsey, William, Monterey.
Kelsey, W. E., Monterey.
Kelso, U. G., Dubois.
Kemp, Jos. W., Roanoke.
Kemper, A. T., Muncie.
Kemper, G. W. H., Muncie.
Kemper, W. W., Muncie.
Kendal, Arnold P., Austin.
Kendall, C. W., Pine Village.
Kendle, G. S., Princeton.
Kennedy, Albert C., Patricksburg.
Kennedy, Bernays, Indianapolis.
Kennedy, D. P., Martinsville.
Kennedy, John, Paragon.

Kennedy, Samuel, Shelbyville.
Kennedy, T. C., Shelbyville.
Kennedy, W. H., Shelbyville.
Kercheval, C. H., Greensburg.
Kern, Aaron, Wabash.
Kern, Chas. B., Lafayette.
Kerr, J. D., Greensfork.
Kerrigan, J. J., Michigan City.
Kerth, J. H., Evansville.
Kesler, A. J., Ft. Wayne.
Ketcham, C. L., Guilford.
Ketchum, George V., Portland, Ore.
Keyes, O. M., Dana.
Keyes, P. H., Dana.
Kienzle, F. W., Greensfork.
Kilgore, Frank, Dalesville.
Kimball, M. C., Converse.
Kimberlin, A. C., Indianapolis.
Kime, J. T., Petersburg.
Kimmel, A. J., Hudson.
King, H. O., Pierceton.
King, J. E., Richmond.
King, J. M., Greencastle.
King, M. O., Rochester.
King, R. F., New Ross.
King, W. F., Columbia City.
King, Warren R., Greenfield.
Kirk, E. E., Spiceland.
Kirkpatrick, A. M., Columbus.
Kiser, Edgar F., Indianapolis.
Kistner, J. W., Elkhart.
Kithcart, N. I., Columbia City.
Kitson, F. S., N. Manchester.
Knabe, Helene, Indianapolis.
Knapp, A. B., Washington.
Knapp, A. J., Evansville.
Knapp, B. J., Evansville.
Knapp, Charles, Evansville.
Knapp, George, Vincennes.
Knapp, H. C., Haysville.
Knapp, Victor, Ferdinand.
Kneale, W. W., Anderson.
Knepple, La Marr, Wakarusa.
Knight, J. C., Jonesboro.
Knoefel, A. F., Linton.
Knott, D. C., Plymouth.
Knox, E. S., Indianapolis.
Kohr, T. W., Hammond.
Kolmer, John, Indianapolis.
Koons, H. H., New Lisbon.
Kratzer, E. F., Peru.
Kreider, M. K., Goshen.
Kreider, W. B., Goshen.
Kremer, F. N., St. Magdalene.
Kremer, Nicholas A., Madison.
Krueger, F. W., Richmond.
Kuhn, B. F., Elkhart.
Kyle, John J., Indianapolis.

LaBier, C. R., Terre Haute.
Lairy, M. M., Lafayette.
Lamberson, Harry, Connersville.
Lambert, J. C., Colfax.
Lambert, J. L., Brazil.
Lanam, J. H., Franklin.
Landon, L. C., Priam.
Lane, W. H., Angola.
Langdon, Harry K., Indianapolis.
Langhead, J. T., Terre Haute.
Larimore, J. M., Greenfield.
Lathrop, A. A., Lexington.
Laubscher, S. R., Evansville.
Laughlin, C. E., Evansville.
Laughlin, E. D., Orleans.
Laval, W. J., Evansville.
Lauer, A. J., Whiting.
Lawson, W. T., Danville.
Layman, D. W., Indianapolis.
Layman, E. W., Terre Haute.
Leathers, D. A., Indianapolis.
Leavitt, R., Terre Haute.
Lecrone, Ira, Silver Lake.
Ledbetter, J. M., Michigan City.
Lee, D. F., Zionsville.
Lee, G. W. H., Indianapolis.
Lee, J. H., Rome.
Leedy, C. E., Pierceton.
Leeson, G. M., Wanatah.
Leiter, W. S., Claypool.
Lemmon, S. W., Albion.
Lemon, H. K., Goshen.
Lemon, J. H., New Albany.
Lent, E. J., South Bend.
Letherman, A. P., Valparaiso.

Lett, O. A., Newburg.
Levering, Guy P., Lafayette.
Lewis, George C., Madison.
Lewis, George F., Knightsville.
Lewis, M. J., Marion.
Libbert, E. J., Aurora.
Lidikay, E. C., Ladoga.
Lindenberger, Irvin, French Lick.
Lindley, C. M., Brooklyn.
Lindley, Laban, Paoli.
Linegar, John M., Fairfield.
Lingle, S. L., Paoli.
Link, Goethe, Indianapolis.
Link, W. H., Indianapolis.
Linthicum, E., Evansville.
Linville, D. S., Columbia City.
Lisman, J. W., New Lebanon.
Listman, S. J., Oaktown.
Littell, W. R., Cambridge City.
Little, Charles S., Indianapolis.
Little, John A., Logansport.
Little, P. B., Whitestown.
Lockhart, T. L., New Harmony.
Lockwood, F. W., South Bend.
Lockwood, R. L., Elkhart.
Loehr, E. C., Noblesville.
Logan, A. R., Algiers.
Logan, H. V., New Salem.
Lohrmann, Henry, Indianapolis.
Long, A. J., Anderson.
Long, Charles R., Pierceton.
Long, H. H., Kingsbury.
Long, H. P., Hartford.
Long, J. B., Indianapolis.
Longanecker, E. W., Anderson.
Longfellow, T. W., Tipton.
Loomis, Charles, Florence.
Loop, A. L., Economy.
Lorenz, J. W., Evansville.
Lorimore, John H. C., Hartford City.
Loring, C. J., Rochester.
Loring, D. J., Valparaiso.
Loring, S. C., Plymouth.
Love, J. R., Zenas.
Lowder, H. R., Bloomfield.
Lowder, Lillie A., Bloomington.
Lowder, L. T., Bloomington.
Lower, M. O., North Manchester.
Luckett, C. D., English.
Luckett, L. P., Terre Haute.
Luckey, J. E., Wolf Lake.
Ludlow, Charles H., Covington.
Ludwick, L. V., Connersville.
Lukemeyer, E. G., Huntington.
Lukemeyer, Louis, Huntington.
Lukenbill, O. C., Indianapolis.
Lybrook, Wm. E., Young America.
Lyle, Urba A., Lafayette.
Lynch, J. Y., Rosedale.
Lyons, J. H., North Webster.

McAlexander, R. O., Indianapolis.
McAllister, E. B., Terre Haute.
MacBeth, A. H., Ft. Wayne.
MacBeth, Harriet S., Ft. Wayne.
McBeth, Walter, Burnettsville.
McBride, Isaac, Jeffersonville.
McCain, R. C., Kentland.
McCall, Jas., Terre Haute.
MacCammon, W., Laurel.
McCarty, M. T., Frankfort.
McCarty, W. W., Canaan.
McCaskey, G. W., Ft. Wayne.
McCaslin, Carl N., Earl Park.
McClain, Leslie, Terre Haute.
McClain, Levi M., Scottsburg.
McClain, W. L., Scottsburg.
McClintock, Charles W., Pittsboro.
McClure, J. W., Butlerville.
McClurg, W. H., Kokomo.
McClurkin, J. C., Evansville.
McConnell, J. E., Carlisle.
McConnell, Maud, Indianapolis.
McCool, H. E., Evansville.
McCool, W. E., Evansville.
McCormick, R. S., Nappanee.
McCormick, W. D., Modoc.
McCoy, George T., Columbus.
McCoy, James N., Vincennes.
McCoy, P. Y., Evansville.
McCracken, A. J., Indianapolis.
McCully, Charles H., Logansport.
McCutchan, J. H., Evansville.

McDonald, A. C., Warsaw.
McDonald, A. J., Bedford.
McDonald, David H., Quincy.
McDonald, J. A., Indianapolis.
McDonald, W. B., New Augusta.
McDowell, James D., Vincennes.
McDowell, L. C., Freelandsville.
McDowell, M. M., Vincennes.
McEvoy, J. B., Ft. Wayne.
McFadden, W. G., Shelbyville.
McFarland, C. C., Abydell.
McFarlin, John T., Williams.
McGaughey, William, Greencastle.
McGowan, J. W., Oakland City.
McGrew, F. A., Laporte.
McHugh, J. E., Ft. Wayne.
McIlvain, Helen K., Huntington.
McIntire, C. W., New Albany.
McJohnston, W. E., Terre Haute.
McKamy, Anna, New Albany.
McKay, J. D., Marion.
McKeand, Robert, Chelsea.
McKee, C. E., Dublin.
McKee, W. E., Tipton.
McKeenan, R. B., Ft. Wayne.
McKinney, J. W., Bluffton.
McKittrick, Ora K., Plainville.
McLeay, J. D., Indianapolis.
McMahan, Adah, Lafayette.
McMahan, J. W., Earl Park.
McMillen, W. W. P., Decatur.
McNamara, D. W., South Bend.
McOscar, E. J., Ft. Wayne.
McPherson, S. L., Montgomery.
McQuown, O. W., Marion.
McShane, John T., Indianapolis.
McShirley, J. L., Sulphur Springs.
McWilliams, O. E., Anderson.
Maas, Alice M., New Albany.
Macer, Thomas, Evansville.
Mackey, C. W., Portland.
Mackey, R. C., Hobart.
Maddox, W. B. S., Vandalia.
Magenheimer, V. A., Waverley.
Magers, F. M., Churubusco.
Magruder, J. W., Peru.
Mainwaring, W. H., Blomington.
Mallett, C. D., Switz City.
Malone, B. Elizabeth, Laporte.
Malpas, S. H., Indianapolis.
Mann, E. B., Muncie.
Mansfield, T. J., Royerton.
Mapes, W. L., Terre Haute.
Maple, J. B., Shelburn.
Marchand, V. H., Haubstadt.
Maris, A. J., Waterloo.
Maris, J. J., Paoli.
Markle, G. C., Winchester.
Markley, H. W., Bluffton.
Markley, S. C., Richmond.
Marlatt, C. L., Indianapolis.
Marsh, John L., Brownsburg.
Marshall, Coglie, Aurora.
Marshall, D. J., Columbus.
Marshall, Geo. D., Young America.
Marshall, R. E., Elwood.
Martin, A., Bellmore.
Martin, A. A., Ridgeway.
Martin, C. A., Princeton.
Martin, F. A., Commiskey.
Martin, H. H., Laporte.
Martin, G. F., Corydon.
Martin, J. S., Rolling Prairie.
Martin, Paul F., Indianapolis.
Martin, W. H., Kokomo.
Martin, F. V., Michigan City.
Marvel, Charles, Richmond.
Mason, Charles H., Tell City.
Mason, Charles R., Hartford City.
Mason, George C., Oakland City.
Mason, L., Bluffton.
Mason, Samuel, Pennville.
Masters, Luella M., Thorntown.
Masters, J. L., Indianapolis.
Matheney, T. G., Auburn.
Mathews, Jas., New Paris.
Mathews, W. R., Madison.
Mattison, D. E., Marion.
Mattox, W. R., Terre Haute.
Maughmer, G. C., Kokomo.
Mauk, J. R., Cambridge City.
Mavity, D. E., Fowler.
Maxam, F. H., Princeton.
Maxedon, T. H., Vincennes.

Maxwell, Allison, Indianapolis.
Maxwell, F. R., Martinsville.
Maxwell, J. H., Martinsville.
May, A., Crothersville.
May, Vance, Washington.
Mayfield, A. L., Bristow.
Mayfield, Marcellus, Royal Center.
Medaris, John W., Brookston.
Medsker, I. T., Indianapolis.
Meek, J. B., Richmond.
Meek, M. L., Abington.
Meloy, Jno., Sellersburg.
Mendenhall, E. T., New Castle.
Mendenhall, P. W., Asherville.
Mendenhall, W. O., Richmond.
Mennett, O. H., Columbus.
Mentzer, S. E., Monroeville.
Mercer, J. D., Poe.
Metcalf, H. P., Andersonville.
Metts, A. H., Ossian.
Metts, Fred, Ossian.
Metts, J. I., Ossian.
Meyer, J. H. William, Laporte.
Meyers, Joseph, Alton.
Miles, James, Merom.
Miley, Isaiah, Anderson.
Miller, Albert, Holton.
Miller, B. E, Albion.
Miller, C. E., Muncie.
Miller, D. B., Brazil.
Miller, D. L., Goshen.
Miller, George D., Logansport.
Miller, G. W., Covington.
Miller, H. C., Greentown.
Miller, H. H., Galveston.
Miller, H. L., Leopold.
Miller, H. M., South Bend.
Miller, James M., Decatur.
Miller, L. C., Alto.
Milligan, J. W., Michigan City.
Millis, E. D., Plainville.
Millis, C. C., Redkey.
Mills, Mary, Princeton.
Mills, W. F., South Bend.
Mills, W. H., Boonville.
Minnick, Horace R., Idaville.
Miranda, W. F., Walkerton.
Mitchell, E. E., Avoca.
Mitchell, F. A., New Albany.
Mitchell, F. L., Everton.
Mitchell, H. F., South Bend.
Mitchell, J. J., Canton.
Mitchell, Josephine M., Lafayette.
Mitchell, W. J., North Vernon.
Mitchell, W. K., Ligonier.
Mitchell, W. P., Gaston.
Mix, C. M., Muncie.
Mock, J. W., Covington.
Modricker, J. M., Wabash.
Moffitt, Wm., West Lafayette.
Molloy, W. J., Muncie.
Monical, G. S., Martinsville.
Montgomery, H. T., South Bend.
Montgomery, J. R., Owensville.
Montgomery, Martin, Owensville.
Montgomery, S. B., Cynthiana.
Moore, C. W., Teegarden.
Moore, Emma W., Kokomo.
Moore, E. P., South Bend.
Moore, H. A., Indianapolis.
Moore, J. B., Kokomo.
Moore, John W., Mexico.
Moore, Maurice G., Vincennes.
Moore, P. G., Wabash.
Moore, W. M., New Albany.
Moorhead, T. W., Terre Haute.
Morgan, Elmer E., Ft. Wayne.
Morgan, F. B., Huntington.
Moroney, J. H., Winchester.
Morr, J. W., Albion.
Morris, C. C., Rockville.
Morris, J. E., Liberty.
Morris, John E., Indianapolis.
Morris, J. L., Kings.
Morris, John L., Columbus.
Morris, Thos., Mt. Zion.
Morris, W. F., Ft. Branch.
Morrison, F. A., Indianapolis.
Morrison, John S., Lafayette.
Morrow, Joseph E., Indianapolis.
Morrow, Sarah J., Richmond.
Morse, Gertrude, Madison.
Moss, D. F., Winamac.
Moss, W. C., Winamac.

Moulder, J. McLean, Kokomo.
Mountain, Joseph R., Connersville.
Moyer, F. E., Pennville.
Muelchi, William, Tell City.
Mueller, F. M., Lawrenceburg.
Mullikin, H. M., Terre Haute.
Mullinix, P., Cloverdale.
Mumaw, H. A., Elkhart.
Murphy, O. C., Scottsburg.
Murphy, R. M., Elkhart.
Murray, D. P., Dunkirk.
Myers, B. D., Bloomington.
Myers, C. L., Covington.
Myers, William H., Ft. Wayne.

Nanney, W. N., Evansville.
Neal, E. M., Edwards.
Neal, W. A., Elkhart.
Neat, T. C., New Albany.
Neeley, J. L., Corydon.
Neff, J. H., Fairbanks.
Nehrbas, J. G., Winona Lake.
Neier, O. C., Indianapolis.
Neighbor, A. G., Fowler.
Nenneker, E. H., Evansville.
Nesbit, William S., Monitor.
Neu, Charles F., Indianapolis.
Newcomb, J. R., Indianapolis.
Newcomber, M. V. B., Tipton.
Newforth, C., Sunman.
Newhouse, O. A., Hillside.
Newlin, S. C., Anderson.
Newman, H. M., South Milford.
Newman, M. N., Ossian.
Newton, J. T., St. Bernice.
Niblack, E. S., Terre Haute.
Nichols, John, Atherton.
Nichols, Wm. E., Andrews.
Nieschang, C. C. F., Ft. Wayne.
Niven, J. S., Crawfordsville.
Nixon, J. E., New Mt. Pleasant.
Nixon, Jno., Farmland.
Noble, T. B., Indianapolis.
Noland, P. D., Kouts.
Norman, J. I., Parkeville.
Norred, W. A., Auburn.
Norrel, J. R., Richmond.
Norris, S. C., Anderson.
Northrup, A. H., Markle.
Norton, F. D., Columbus, R. F. D
Norton, William J., Hope.
Nourse, F. P., Alexandria.
Null, L. S., New Haven.
Nusbaum, C. E., Bremen.
Nusbaum, W. H., Auburn.
Nussell, Frederick, Brazil.
Nye, J. H., Cromwell.

Oberlin, T. W., Hammond.
O'Brien, B. M., New Winchester.
O'Brien, W. M., Danville.
O'Dell, T. A., Indianapolis.
Oliver, John H., Indianapolis.
Olmsted, R. T., Versailles.
Orf, George, Indianapolis.
Orr, W. H., Brazil.
Osborn, Harry S., Pittsboro.
Osborn, John A., New Winchester.
Osgood, Howard G., Gosport.
Osterman, A. G., Dudleytown.
Ott, J. E., Ashley.
Otto, A. E., Alexandria.
Outland, Edgar M., Indianapolis.
Overman, C. J., Marion.
Owen, J. E., Evansville.
Owens, O. W., Muncie.

Paddock, C. A., Portland.
Page, Lafayette, Indianapolis.
Palmer, Adelbert L., Logansport.
Pannenborg, J. C., Hammond.
Pantzer, Hugo O., Indianapolis.
Parker, E. E., Culver.
Parker, E. E., Oxford.
Parker, J. J., Merom.
Parker, O. O., Merom.
Parkison, W. M., Boswell.
Parks, B. W., Bourbon.
Parks, James F., Cumback.
Parr, J. N., Joiletville.
Parrish, J. W., Shelbyville.
Parrish, M. F., Monroe.
Parrish, Rebecca, Logansport.
Parsons, C. H., Rushville.

Pate, J. R., Milan.
Patten, V. C., Morristown.
Patterson, J. W., Fairmount.
Patton, Charles, Terre Haute.
Patton, W. H., Orleans.
Paxton, J. T., Glenwood.
Payne, F. M., Princeton.
Payne, J. H., Julietta.
Paynter, L. W., Campbellsburg.
Peacock, S. R., Ladoga.
Peare, R. C., Bellmore.
Pearlman, Samuel, Stone Bluff.
Pearson, J. R., Bedford.
Peck, W. M., South Bend.
Pell, George M., Carbon.
Pendleton, George, Indianapolis.
Perce, B. H., Anderson.
Perdue, C. R., Auburn.
Perkins, O. L., Oolitic.
Perry, Charles, Lewis Creek.
Perry, G. L., Portland.
Peters, D. C., Greentown.
Peters, J. B., Macy.
Peters, W. H., Lafayette.
Petersdorf, Gustave A., Indianapolis.
Petet, Marshall, Veedersburg.
Pettigrew, D. A., Flat Rock.
Pettijohn, Fred L., Indianapolis.
Petitjean, J. W., St. Wendell.
Pettijohn, Otto B., Indianapolis.
Peyton, David C., Jeffersonville.
Pfaff, John A., Indianapolis.
Pfaff, O. G., Indianapolis.
Pfafflin, Charles A., Indianapolis.
Phares, H. E., Shelbyville.
Phares, J. W., Howell.
Phipps, D. L., Whiteland.
Pierson, Allen, Spencer.
Pigman, Garrett, Liberty.
Pinkston, J. M., Milan.
Pirtle, G. W., Carlisle.
Planck, E. A., Union, Mich.
Ploughe, M. L., Elwood.
Ploughe, M. T., Kempton.
Plummer, I. N., Shoals.
Pohlman, A. G., Bloomington.
Poland, U. G., Muncie.
Pollard, W. S., Evansville.
Pollom, Reginald, Cayuga.
Porter, J. B., Elkhart.
Porter, Miles F., Ft. Wayne.
Post, B. O., Sulphur Springs.
Potter, J. E., Milford.
Potter, Theodore, Indianapolis.
Pounder, Malcolm, Elkhart.
Powell, E. H., Valparaiso.
Powell, E. U., Greentown.
Pratt, B. W., Goodland.
Preston, A. O., Fairfield.
Preston, H. P., Plymouth.
Preston, J. L., Greencastle.
Price, C. R., Monroeville.
Price, E. O., Ladoga.
Price, M. D., Nappanee.
Price, W. A., Nappanee.
Pritchard, Caleb A., Gosport.
Pritchett, W. S., Evansville.
Proegler, Carl, Ft. Wayne.
Proudfit, Louis, Osceola.
Puckett, J. L., Kokomo.
Pugh, F. H., Williamsport.
Pulliam, John M., Logansport.
Purkiser, W. J., Salem.
Putnam, W. E., Whiting.

Quick, W. R., Delphi.
Quillen, S. N., Linton.

Radcliffe, F. E., Bourbon.
Ragan, John S., Plainfield.
Ramsbrok, C. R., Huntingburg.
Ramsey, D. C., Mt. Vernon.
Ramsey, J. P., Vincennes.
Randolph, D. F., Waldron.
Ranke, J. H., Ft. Wayne.
Rankin, T. B., Odon.
Rannells, J. Newton, Rochester.
Rariden, Charles E., Bedford.
Ravdin, M., Evansville.
Rawley, Jas. A., Brazil.
Rawlings, C. L., New Harmony.
Rawlings, J. V., Wirt.
Rawlings, Sam'l O., New Harmony.

Ray, C. C., Arcadia.
Ray, C. C., Sanford.
Ray, Frank E., Shelbyville.
Rea, C. G., Muncie.
Rea, C. S., Falmouth.
Rea, O. A., Culver.
Rea, R. H., Culver.
Read, H. G., Tipton.
Reader, W. H., New Amsterdam.
Reagan, A. W., Mooresville.
Reagan, J. S., Lebanon.
Reagan, R. M., Monon.
Reavis, W. J., Evansville.
Redman, L. H., Scipio.
Reed, A. A., Salem.
Reed, J. H., Logansport.
Reeve, Joseph L., Edwardsport.
Reeves, E. W., Burr Oak.
Regennas, E. G., Hope.
Renner, M. E., Urbana.
Rennoe, C. A., South Bend.
Reser, William M., Lafayette.
Revis, George F., Lafayette.
Reyer, E. C., Indianapolis.
Reynard, G., Union City.
Reynolds, D. Monroe, Clayton.
Reynolds, Francis M., Montpelier.
Reynolds, James M., Memphis.
Rhamey, B. W., Ft. Wayne.
Rice, Jno. T., Attica.
Rice, S. M., Terre Haute.
Richards, Renos H., Patricksburg.
Richards, Samuel D., Patricksburg.
Richards, William R., New Albany.
Richardson, W. H., Vernon.
Richey, Samuel R., Donaldson.
Ridenour, D. C., Peru.
Ridpath, H. W., Indianapolis.
Ried, S. M., Muncie.
Rieman, William H., Millersburg.
Rietz, P. C., Evansville.
Riley, J. H. S., Sardinia.
Rine, E. W., Winchester.
Ristine, W. H., Crawfordsville.
Ritter, C. L., Indianapolis.
Ritter, H. O., Orangeville.
Ritter, J. K., Seymour.
Ritter, Mary, Angola.
Ritter, R. H., Indianapolis.
Ritter, T. B., Orleans.
Roark, B. H., Jamestown.
Roark, C. A., Milton.
Robertson, D. W., Deputy.
Robertson, J. F., Indianapolis.
Robinson, C. C., Indiana Harbor.
Robinson, F. C., Martinsville.
Robinson, G. M., Loogootee.
Robinson, H. C., Martinsville.
Robinson, Michael, Glezen.
Robinson, W. B., Indianapolis.
Robison, J. E., Greetingsville.
Rodgers, A. E., Somerset.
Rogers, A. G., Parker City.
Rogers, O. F., Bloomington.
Rogers, R. C., Bloomington.
Rogers, H. C., Rockville.
Rogers, J. B., Michigan City.
Rogers, Joseph G., Logansport.
Roney, David C., Milan.
Roope, A. P., Columbus.
Root, Wm. W., Parker.
Rose, B. S., Evansville.
Rose, B. A., Linton.
Rosenthal, I. M., Ft. Wayne.
Rosenthal, M. I., Ft. Wayne.
Ross, Alex. A., East Chicago.
Ross, David, Indianapolis.
Ross, George A., Ft. Wayne.
Ross, J. C., Bloomington.
Ross, J. H., Kokomo.
Ross, R. H., Kokomo.
Ross, W. H., Veedersburg.
Rothrock, M. W., Tell City.
Row, George S., Indianapolis.
Rowe, L. M., Indianapolis.
Rowland, George, Covington.
Rubsam, Joseph, Logansport.
Rubush, T. R., London.
Ruddell, I. N., Jeffersonville.
Ruddick, L., Seymour.
Rufert, A. M., Attica.
Ruhl, W. D., Ft. Wayne.
Runcie, G. H., Poseyville.
Runyan, C. P., Elwood.

Rush, M. A., Anderson.
Rutter, Jno., Cynthiana.
Rutherford, R. S., New Albany.
Ryker, Charles, Manville.

Salb, J. P., Jasper.
Samuels, William L., Winnemucca, Nevada
Sanders, I. M., Adams.
Sanders, J. M., Princeton.
Sandy, W. J., Martinsville.
Sarber, W. C., Argos.
Sarner, J. A., Scottsburg.
Sauer, Frederick W., Indiana Harbor.
Saunders, D. R., North Vernon.
Sawyer, F. M., South Bend.
Scales, Harvey, Boonville.
Schaefer, C. R., Indianapolis.
Schaeffer, Geo. C., Bloomington.
Schell, Walker, Terre Haute.
Scherer, S. P., Indianapolis.
Schilling, Carl, Ft. Wayne.
Schilling, John, Ft. Wayne.
Schillinger, R., Richmond.
Schleiker, A. G., East Chicago.
Schneck, Luella N., Indianapolis.
Schneider, A. L., Ft. Wayne.
Schoen, P. H., New Middletown.
Schofield, J. V., Greensburg.
Schoonover, William R., Warsaw.
Schreiber, A. H., Lafayette.
Schrock, H. W., Lagrange.
Schrock, J. J., Emma.
Schrock, O. L., La Grange.
Schuck, John H., Chandler.
Schultz, Guy A., Lebanon.
Schultz, Herman S., Lafayette.
Schultz, W. H., Lebanon.
Schuman, O. V., Columbia City.
Schwartz, W. D., Portland.
Schwartz, W. P., Crown Point.
Scobey, A. W., Kankakee, Ill.
Scott, Eueldas K., Hartford City.
Scott, John T., Indianapolis.
Scott, J. W. C., Columbia City.
Scott, Noble W., Huntington.
Scott, R. F., Kokomo.
Scott, W. I., Kokomo.
Scudder, Charles P., Washington.
Scull, Eleanor, Hammond.
Seabring, D. A., Auburn.
Seaman, J. B., Osceola.
Seaton, Charles, Martinsville.
Seaton, Guy, Martinsville.
Seiberth, Jacob, Julietta.
Selman, John W., Greenfield.
Selman, Frank W., Greenfield.
Seneff, J. H., Crystal.
Sensenich, A. S., Wakarusa.
Sessions, S. K., Evansville.
Severin, Louis, Bluffton.
Sexton, John C., Rushville.
Seymour, C. A., Wawaka.
Seymour, T. F., Mishawaka.
Shackelford, T. J., Warsaw.
Shacklett, W. B., New Albany.
Shaddy, Elmer D., Saratoga.
Shaddy, John H., Vevay.
Shafer, W. S., Rochester.
Shaffer, A. W., Huntington.
Shaley, F. W., Terre Haute.
Shanklin, E. M., Hammond.
Shanklin, Leslie B., Sullivan.
Sharp, Harry C., Jeffersonville.
Sharp, Walter N., Indianapolis.
Sharrer, H. E., Hammond.
Sharrer, Wilbur F., Delphi.
Shaw, H. M., Gaston.
Shaw, S. T., Kimmell.
Sheek, D. W., Greenwood.
Sheets, William H., Jeffersonville.
Shellhamer, D. C., Wabash.
Shepherd, G. W., Redkey.
Shepherd, Vincent, Dupont.
Sherwood, B. M., Linton.
Sherwood, E. T., Linton.
Sherwood, W. C., Mitchell.
Shields, J. M., Seymour.
Shields, J. S., Elizaville.
Shipp, Floyd N., Indianapolis.
Shirley, H. W., Shoals.
Shiveley, M. T., Marion.
Shoaf, F. A., Veedersburg.

Shobe, W. A., Ligonier.
Shoemaker, S. A., Poneto.
Shonkwiler, T. M., New Market.
Shook, N. J., Kendallville.
Short, I. W., Elkhart.
Short, John L., Lagrange.
Short, R. B., Bedford.
Short, R. B., Union Mills.
Short, William H., Lagrange.
Shotts, H. R., Nebraska.
Showalter, J. E., Waterloo.
Shull, Charles Q., Montpelier.
Shultz, J. B., Logansport.
Shumaker, W. F., Butler.
Sibley, L. H., Terre Haute.
Sigler, George A., Indianapolis.
Sigmon, E. L., New Albany.
Sigmond, H. W., Crawfordsville.
Simmons, L. A., Kokomo.
Simmons, W. D., Clear Creek.
Sims, I. G., Portland.
Sims, S. B., Frankfort.
Sipe, J. A., Carthage.
Sipe, R. W., Orange.
Sisson, Ernest R., Maxwell.
Sledd, S. D., Ft. Wayne.
Sloan, John N., Spencer.
Sloan, W. W., French Lick.
Slocum, Stewart, Fortville.
Slonaker, C. L., Leitersford.
Sluss, J. W., Indianapolis.
Smadel, Joseph W., Vincennes.
Smick, C. M., Terre Haute.
Smith, A. F., Wawpecong.
Smith, A. H., Star City.
Smith, C. H., Lebanon.
Smith, C. W., Selma.
Smith, DeLaskie, Lebanon.
Smith, George F., Weisburg.
Smith, G. C., Poseyville.
Smith, Jacob F., Brazil.
Smith, J. W., Vevay.
Smith, Geo. H., Knightstown.
Smith, M. S., Laporte.
Smith, Mrs. L. F. J., Wabash.
Smith, L. W., Wabash.
Smith, Martha J., Indianapolis.
Smith, R. H., Kokomo.
Smith, S. E., Richmond.
Smith, I. F., Arlington.
Smith, S. W., Leesville.
Smith, Thomas G., Brownsburg.
Smith, Thurston, Bloomington.
Smith, W. A., Otterbein.
Smith, W. C., Rushville.
Smith, W. H., Rushville.
Smith, W. H., Bedford.
Smoot, D. Brooks, Washington.
Snapp, J. A., Goshen.
Snider, J. W., Fairland.
Snider, Warren, Fairland.
Snyder, Alonzo D., Miles, Wash.
Snyder, E. R., Troy.
Solt, W. J., San Pierre.
Somers, Joseph L., Vincennes.
Sommer, E. F., Indianapolis.
Sourwine, John D., Brazil.
Sowder, Charles R., Indianapolis.
Sparks, Joseph T., Yeddo.
Spaulding, L. A., Bluffton.
Spear, A. H., Spencer.
Spear, Robert, East Chicago.
Spencer, M. J., Indianapolis.
Spencer, William A., Wolcott.
Spickermon, H. R., Muncie.
Spigler, O. R., Terre Haute.
Spillman, F. J., Connersville.
Spink, Mary A., Indianapolis.
Spink, T. F., Washington.
Spink, Urbana, Indianapolis.
Spinning, A. L., Covington.
Spitler, Charles E., Saratoga.
Spohn, G. W., Elkhart.
Spooner, Jared, Peru.
Spoor, John, Brooklyn.
Spradley, N. M., Tennyson.
Springston, C. E., Selvin.
Spurgeon, Cornelius, Kossuth.
Spurgeon, O. E., Muncie.
Staley, L. B., Bicknell.
Staley, Thomas M., Bicknell.
Stalker, Bodine, Borden.
Stallings, F. L., Caborn.
Stark, H. W., Holland.

Stark, J. W., Evansville.
Starr, W. L., New Albany.
Stauffer, Edwin R., Hammond.
Steincamp, E. T., Haubstadt.
Stemen, C. B., Ft. Wayne.
Stemen, G. B., Ft. Wayne.
Stemm, W. H., North Vernon.
Stephenson, T. J., Lapel.
Sterne, Albert E., Indianapolis.
Stevens, B. C., Logansport.
Stevens, H. C., Star City.
Stevens, R. C., Plymouth.
Stevenson, D. W., Richmond.
Stewart, C. S., Auburn.
Stewart, Clark B., Vincennes.
Stewart, Jonas, Anderson.
Stewart, J. W., Logansport.
Stewart, O. H., Orleans.
Stillson, Jos. O., Indianapolis.
Stinson, A. E., Athens.
Stipp, F. E., Bedford.
Stockton, Sarah, Indianapolis.
Stockwell, John, Charlestown.
Stoddard, J. M., Kennard.
Stoltz, Charles, South Bend.
Stone, Chas. E., Windom.
Storch, L. A. E., Indianapolis.
Stormount, R. M., Stewartsville.
Stotlemyer, C. I., Hagerstown.
Stout, O. L., Upland.
Stout, O. M., Stanford.
Stover, C. J., Eaton.
Strange, J. W., Loogootee.
Strickland, Geo., Francisco.
Strickler, S. L., Boggstown.
Stroube, C. N., New Maysville.
Stroupe, C. C., Mishawaka.
Stuart, Robert, Spiceland.
Stucky, Frederick V., Gosport.
Stucky, John M., Gosport.
Study, J. N., Cambridge City.
Stultz, J. E., Ft. Wayne.
Stunkard, T. C., Terre Haute.
Sturdivant, M. G., Chestnut Hill.
Sturm, E. A., Jasper.
Sugg, H. H., Mt. Vernon.
Summers, H. C., Amo.
Summers, O. R., Middletown.
Sutcliffe, J. A., Indianapolis.
Sutherland, O. L., Laporte.
Sutherland, P. N., Angola.
Suttner, C. N., Walla Walla, Wash.
Sutton, H. H., Aurora.
Suverkrup, Lotta R. A., Columbus.
Swan, D. H., Francisco.
Swarts, Vesta M. W., Auburn.
Swarts, Willard W., Auburn.
Swartzel, Joseph A., Indianapolis.
Sweeney, I. F., Milton.
Sweet, E. M., Martinsville.
Sweet, Otis, Martinsville.
Swezey, Harry, Marion.
Swope, A. A., Crawfordsville.

Tabor, F. A., Terre Haute.
Talbott, J. E., Linton.
Taylor, Chas. E., South Bend.
Taylor, D. E., Velpen.
Taylor, E. C., Chandler R. R.
Taylor, E. C., Winslow.
Taylor, James A., Montpelier.
Taylor, J. E., Leopold.
Taylor, James H., Indianapolis.
Taylor, T. H., Evansville.
Taylor, U. T., Newburg.
Tea, R. S., Lafayette.
Teaford, S. F., Paoli.
Teagarden, J. A., Indiana Harbor.
Teal, Geo. A., Kendallville.
Tebault, W. P., New Albany.
Tepe, G. W., Evansville.
Terflinger, T. W., Logansport.
Terhune, R. W., Whiteland.
Terrell, L. B., Anderson.
Terrell, W. H., Stilesville.
Terry, C. C., South Bend.
Teters, B. F., Middlebury.
Thayer, M. N., Linton.
Thiebaud, Hugh M., Vevay.
Thixton, E. D., Sullivan.
Thomas, Charles E., Leesburg.
Thomas, Charles L., Logansport.
Thomas, James, Evansville.
Thomas, J. J., Winamac.

Thomas, P. B., Decatur.
Thomas, R. F., Winamac.
Thomas, R. M., Greensburg.
Thomas, S. C., Milroy.
Thomas, William, Greensburg.
Thomas, W. H., Elkhart.
Thompson, Frank, Lafayette.
Thompson, G. W., Winamac.
Thompson, J. L., Indianapolis.
Thompson, N. H., Wabash.
Thompson, W. H., Winamac.
Thompson, W. L., Mooresville.
Thompson, W. N., Sullivan.
Thornburg, F. R., Middletown.
Thorne, J. C. F., Kokomo.
Thorner, Moses, Indianapolis.
Thornton, Walter E., Montpelier.
Thralls, C. W., Hymera.
Thralls, R. T., Hymera.
Throckmorton, G. K., Lafayette.
Thurston, H. S., Indianapolis.
Tilford, A. S., Martinsville.
Tillotson, A. G., Michigan City.
Tindall, E. F., Muncie.
Titus, Chas., Warrington.
Tobias, A. W., Elwood.
Todd, Robert N., Indianapolis.
Tolliver, J. A., French Lick.
Tomlin, W. S., Indianapolis.
Tomlinson, C. H., Cicero.
Torian, O. N., Indianapolis.
Tourner, F. F., Bloomington.
Tourner, J. P., Bloomington.
Townsend, R. C., Osgood.
Treedall, D. G., Evansville.
Tremain, M. A., Adams.
Trenary, D. F., Modoc.
Trent, I. N., Muncie.
Treon, James F., Aurora.
Trook, E. M., Marion.
Troutman, R. E., Logansport.
Trueblood, Charles, Anderson.
Trueblood, J. C., Loogootee.
Truitt, F. L., Noblesville.
Tubbs, George K., Alfordsville.
Tucker, Arthur W., Logansport.
Tucker, A. R., Noblesville.
Tucker, F. A., Noblesville.
Tucker, G. W., Dana.
Tucker, H. G., Cromwell.
Tucker, W. W., Greencastle.
Tully, J. A., Millville.
Turman, J. I. S., Cynthiana.
Turner, Harriet E., Indianapolis.
Tyner, S. L., Boonville.

Ulmer, D. R., Alexandria.
Umberhine, C. D., Reese Mills.
Urmston, Paul R., Valparaiso.
Urquhart, R. T., South Bend.

Vallette, W. O., Goshen.
Van Buskirk, E. M., Ft. Wayne.
Vancleave, M. B., Terre Haute.
Vancleave, R. H., Farmersburg.
Vanderburg, J. M., Albany.
Van Matre, C. E., New Castle.
Van Nuys, Mary M., Lebanon.
Van Osdol, D. D., Rushville.
Van Pelt, George F., Connersville.
Van Pelt, R. T., South Bend.
Van Sandt, F. A., Bloomfield.
Van Sant, W. P., Brooklyn.
Van Sweringen, B., Ft. Wayne.
Van Sweringen, G., Ft. Wayne.
Van Sweringen, H., Ft. Wayne.
Varble, W. M., Jeffersonville.
Varier, J. A., South Bend.
Varner, G. W., Evansville.
Varner, R. D., Kokomo.
Varner, W. T., Evansville.
Vaughan, I. J., Topeka.
Vaughn, Martin, Hammond.
Veach, P. H., Staunton.
Veasey, W. M., Avilla.
Veraker, M. F., Kitchell.
Verwayne, E. J., Evansville.
Vickery, C. R., Valparaiso.
Viehe, C. G., Evansville.
Viehe, C. H., Evansville.
Vinton, A. E., Muncie.
Von Baranda, Oscar, South Bend.
Voris, S. M., Columbus.
Voyles, H., Bedford.

Wade, F. C., Lima.
Wadsworth, W. W., Muncie.
Wagner, S. C., Wakarusa.
Wagner, T. A., Indianapolis.
Wahl, G. F., Bremen.
Wainscott, O. C., Peru.
Walden, C. H., New Market.
Walker, Edwin, Evansville.
Walker, Jas. H., Henryville.
Walker, W. H., Portland.
Walker, W. O., Wolcott.
Walker, Wm. S., Lafayette.
Wall, Charles T., Washington.
Wallace, B., Franklin.
Wallace, Jas., Newport.
Wallace, J. C., Ft. Wayne.
Wallace, Lew E., Indianapolis.
Wallage, George W., Middletown.
Waller, W. H., Angola.
Walls, G. W., Mitchell.
Walls, J. W., Eckerty.
Walser, J. A., Anderson.
Walter, F. J., Kramer.
Walters, C. R., Paxton.
Walters, S. W., New Paris.
Walton, G. F., Dublin.
Wampler, J. M., Richmond.
Ward, Clay L., Indianapolis.
Ward, J. M., Kewana.
Ward, J. H., Indianapolis.
Ward, J. O., Peru.
Ward, John P., Vevay.
Ward, A. O., Indianapolis.
Ware, C. M., Greentown.
Warren, C. L., Chesterton.
Warren, F. R., Michigan City.
Warster, Wm. H., North Liberty.
Warter, Philip, Evansville.
Washburn, H. A., Freetown.
Washburn, P. E., Buffalo.
Washburn, S. S., Lafayette.
Washburne, G. F., Elkhart.
Waters, S. C., Middletown.
Watson, J. C., Hobart.
Watters, P. J., Indianapolis.
Weathers, J. F., New Albany.
Weaver, Amzi, Elizabeth.
Weaver, B. P., Ft. Wayne.
Webber, I. B., Warsaw.
Webster, J. C., Lafayette.
Wedding, M. F., Rome.
Weer, H. H., Indianapolis.
Weever, J. B., Evansville.
Wegner, W. G., South Bend.
Weil, H. J., Indianapolis.
Weinstein, Joseph, Terre Haute.
Weinstein, L. J., Terre Haute.
Weir, C. T., Bloomington.
Weir, S. D., Terre Haute.
Weir, W. D., Hammond.
Weiss, H. G., Lamar.
Weist, H. H., Richmond.
Welborn, J. Y., Evansville.
Welch, D. W., Mt. Vernon.
Welch, Jno. A., Letts.
Welch, O. F., Westport.
Weller, J. E., Richmond.
Werner, J. F., Elkhart.
Wertz, T., Evansville.
West, B. F., Singapore Straits Settlement.
West, E. A., Folsomville.
Westfall, A. B., Lafayette.
Westover, R. Leland, Indianapolis.
Wetherell, R. B., Lafayette.
Wetzel, Geo., Rockport.
Wharton, J. O., Exchange.
Wharton, W. L., Matthews.
Wheeler, H. H., Indianapolis.
Wheelock, K. K., Ft. Wayne.
Whery, Mary A., Ft. Wayne.
Whery, W. P., Ft. Wayne.
Whetsell, L. C., Bloomington.
Whippy, Geo. A., Goshen.
White, B. S., Greensburg.
White, Charles A., Danville.
White, Claudius H., Cataract.
White, David, Tobinsport.
White, R. P., Ft. Wayne.
White, William C., Indianapolis.
Whitesides, L. L., Franklin.
Whiting, U. G., Wabash.
Whitledge, G. A., Anderson.
Whitmer, B. F., Goshen.

Whitsett, S. A., Kent.
Whitson, E. M., Jonesboro.
Whittingill, B. F., Ellsworth.
Wickham, W. A., South Bend.
Wiedeman, F. E., Terre Haute.
Wiggins, D. S., Losantville.
Wilcox, F. H., New Albany.
Wilcox, F. T., Laporte.
Wildman, W. S., San Jacinto.
Wiles, Frank M., Indianapolis.
Wiley, Harriet, Portland.
Wilkins, S. V., Roanoke.
Willan, R. D., Trafalgar.
Willan, W. G., Kendallville.
Willeford, George W., Washington.
Willetts, A. J., Lowell.
Williams, Alice B., Columbia City.
Williams, C. L., Greensburg.
Williams, Charles, Anderson.
Williams, C. S., Columbia City.
Williams, Franklin A., Cuba.
Williams, G. T., Crawfordsville.
Williams, James L., Indianapolis.
Williams, J. S., Macy.
Williams, L. L., Brazil.
Williams, L. O., Anderson.
Williams, T. B., Angola.
Williams, W. H., Lebanon.
Williamson, A. A., Marshall.
Williamson, R. B., Paragon.
Willien, Leon J., Terre Haute.
Willis, J. H., Evansville.
Willis, E. A., Indianapolis.
Willoughby, G. E., Gosport.
Wilson, Amos L., Indianapolis.
Wilson, Dalton, Yankeetown.
Wilson, D. W., Argos.
Wilson, H. W., Michigan City.
Wilson, James, Wabash.
Wilson, L. A., Michigan City.
Wilson, M. C., Lafayette.
Wilson, Ralph, Shirley.
Wilson, R. J., Salem.
Wilson, R. S., Berne.
Wilson, T. W., New Harmony.
Wilson, W., Yankeetown.
Wilson, W. L., Scipio.
Wiltfong, C. O., Chesterton.
Wiltshire, J. W., Bloomington.
Wilton, I., Evansville.
Winans, H. M., Muncie.
Winders, L. C., Elizabeth.
Winstandley, W. C., New Albany.
Wiseman, B. W. S., Culver.
Wishard, E. E., Noblesville.
Wishard, W. H., Indianapolis.
Wishard, W. N., Indianapolis.
Wisner, W. E., Columbus.
Witting, A. P., St. Joseph.
Wolfe, F. E., Jeffersonville.
Wolfe, A. S., New Albany.
Wolfe, F. E., Lanesville.
Wolfe, Z. C., Corydon.
Wolferman, A. G., Indianapolis.
Wollenmann, A. G., Ferdinand.
Wood, E. U., Columbus.
Wood, H. D., Angola.
Wood, J. M., Greensburg.
Wood, N. S., Anderson.
Wood, T. F., Angola.
Wood, W. F., Mishawaka.
Wood, W. W., Angola.
Wooden, E. I., Rushville.
Woodruff, C. A., Ligonier.
Woollen, G. V., Indianapolis.
Woollen, H. M., Indianapolis.
Woollen, L. J., Vevay.
Woolery, Perry, Heltonville.
Work, J. A., Elkhart.
Worrell, J. P., Terre Haute.
Worsham, L., Evansville.
Wray, John T., New Albany.
Wright, B. C., Indian Springs.
Wright, C. E., Indianapolis.
Wright, C. H., Yorktown.
Wright, Charles L., Huntington.
Wright, C. R., Frankton.
Wright, Ervin, Huntington.
Wright, Jacob E., Cambridge City.
Wright, J. W., Kokomo.
Wright, M. R., Knox.
Wright, Thomas, Boonville.
Wright, William M., Indianapolis.
Wrork, J. H., Shelburn.

Wyatt, A. R., Lagrange.
Wyeth, Chas., Terre Haute.
Wyburn, D. C., Sheldon.
Wynn, Frank B., Indianapolis.

Yager, E. J., Graysville.
Yarling, J. E., Peru.
Yencer, M. W., Boston.
Yenne, C. H., Washington.
Yocum, Boaz, Coal City.
Yoder, A. C., Goshen.
Yohn, E. F., Valparaiso.
Young, Franklin, Richmond.
Young, G. M., Evansville.
Young, J. B., Cicero.
Young, M. H., Harmony.
Young, S. J., Terre Haute.
Young, S. J., Valparaiso.
Youngblood, E. L., Boonville.
Youngkin, J. W., Wolcottville.
Yung, Rudolph, Terre Haute.

Zaring, C. T., Greencastle.
Zaring, P. A., Bloomington.
Ziliak, A. L., Francisco.
Ziliak, J. E., Haubstadt.
Zimmerman, J., Lynnville.
Zinn, G. E., Elkhart.
Zinninger, Henry A., Lucerne.
Zuerner, Joseph, Jeffersonville.

HONORARY MEMBERS.

Avery, Jno. P., Indianapolis.
Alexander, W. P., Camden.
Andrew, George L., Chicago.
Bare, John W., Salem.
Brooke, Jared E., Plymouth.
Burrage, S., W. Lafayette.
Chatard, Rt. Rev. Bishop, Indianapolis.
Cisna, W. R., Chicago.
Comingor, J. A., Indianapolis.
Compton, J. W., Evansville.
Coulter, Stanley, Lafayette.
Darling, N. S., Laporte.
Day, B. J., Evansville.
Ferguson, F. C., Indianapolis.
Field, M. H., Indianapolis.
Florer, T. W., Texas.
Furniss, H. W., Bahia, Brazil.
Gould, Vernon, Rochester.
Hacker, T. S., Indianapolis.
Jameson, P. H., Indianapolis.
Kautz, Jno., Wabash.
Kelley, F. H., New Harmony.
Kern, L., Kokomo.
Kitchen, J. M., Indianapolis.
Lewis, E. R., Washington, D. C.
McNab, P., Indianapolis.
Miller, Harry, N. M. Home, Marion.
Moore, S. H., Indianapolis.
Mulhausen, M., Evansville.
Oatley, John H., New Philadelphia.
Parker, M. G., Danville.
Pate, J. R., Milan.
Patterson, A. W., Indianapolis.
Powell, J. Z., Logansport.
Ralston, W. G., Evansville.
Reed, Charles B., Chicago.
Robb, J. W., Indianapolis.
Ryan, W. B., Indianapolis.
Shiveley, A. H., Yorktown.
Schuyler, P. L., Evansville.
Smith, H. M., Vincennes.
Stone, R. F., Indianapolis.
Walling, Willoughby, Chicago.
Waterman, L. D., Indianapolis.
Williams, Lewis, Marion.
Wiseman, Sumner, Culver.

2 GAL 32 1